

THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

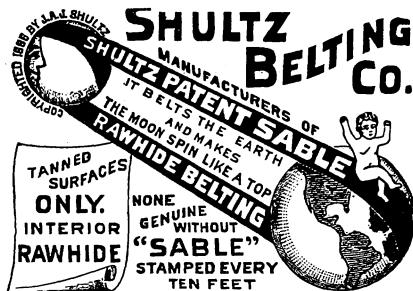
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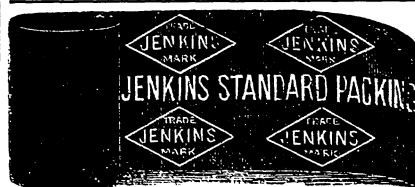
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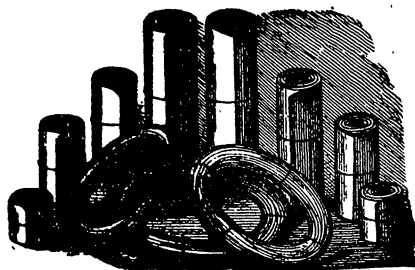
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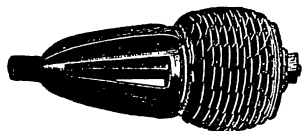
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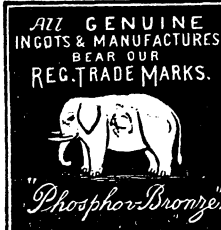
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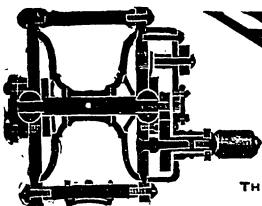
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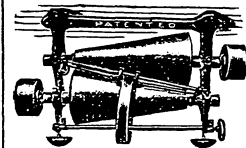
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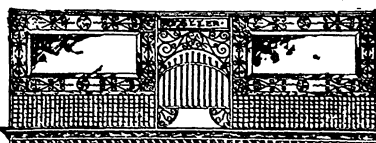
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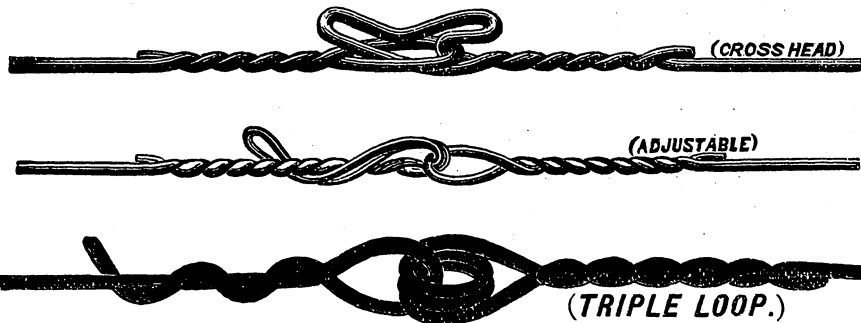
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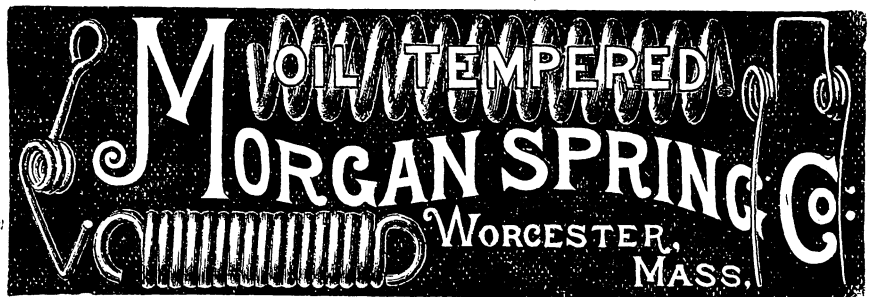
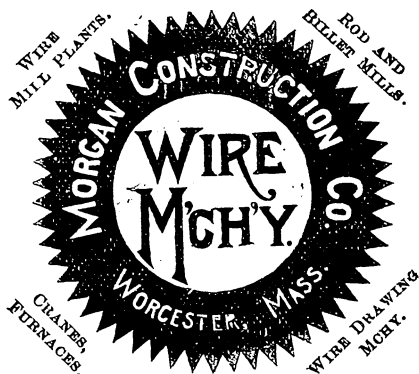


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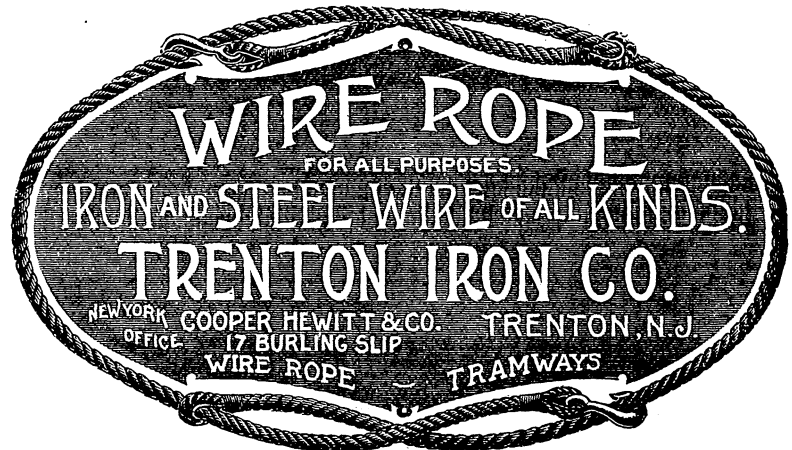
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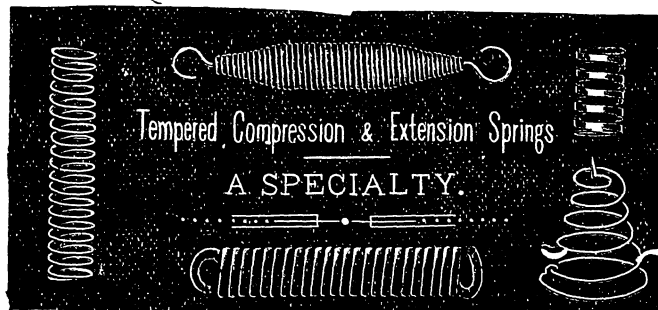
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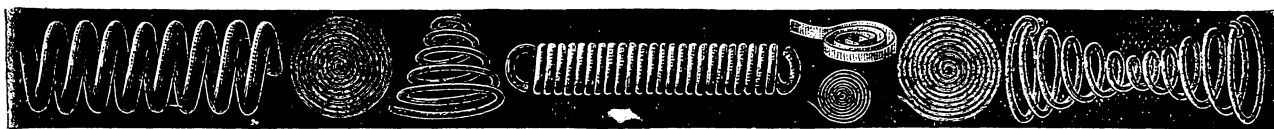
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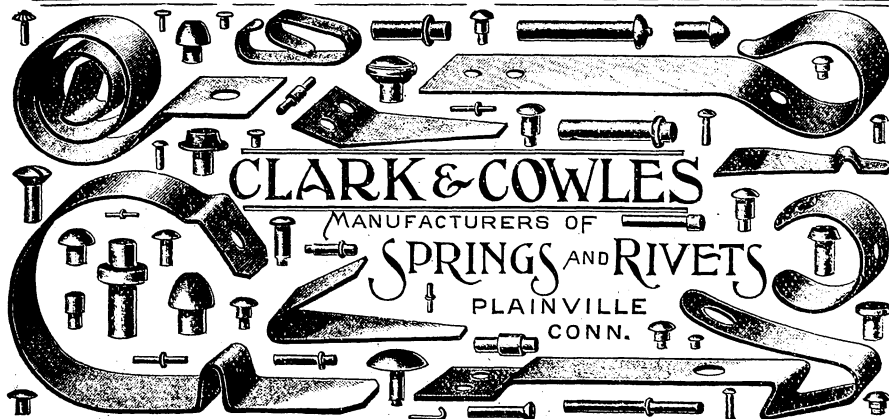
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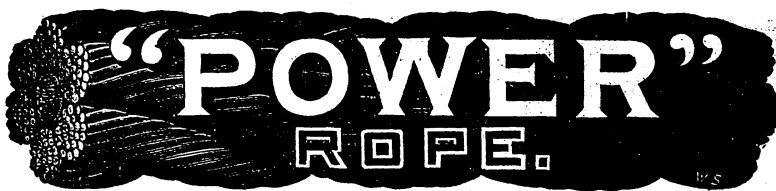
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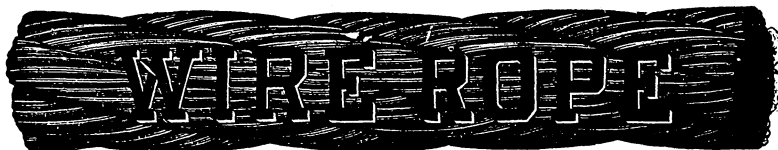
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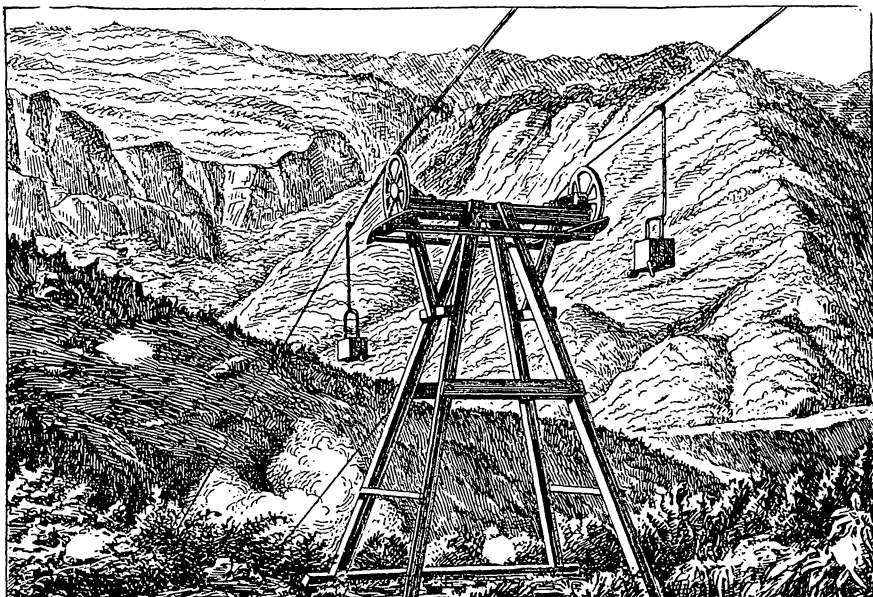
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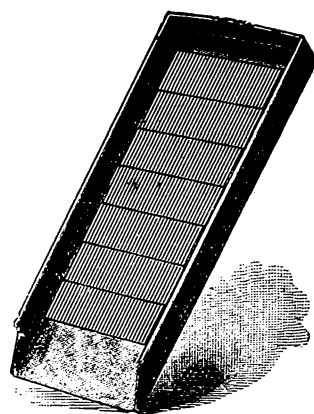
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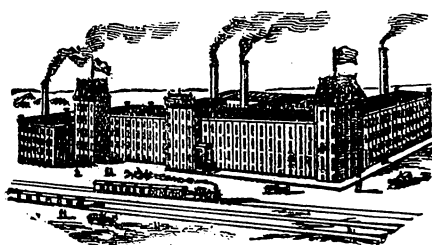
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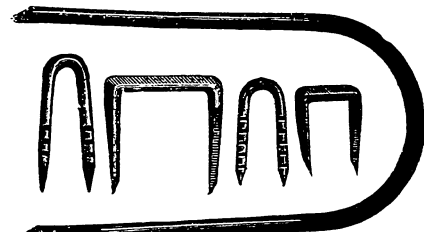
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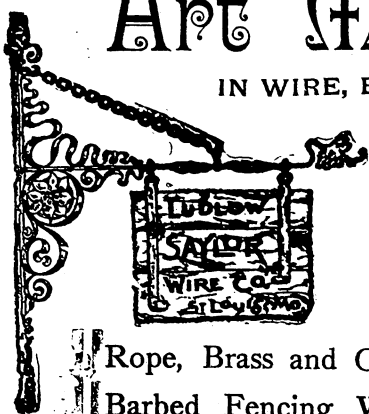
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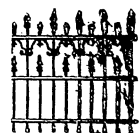


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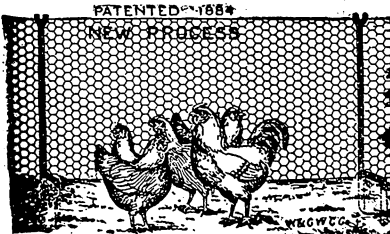
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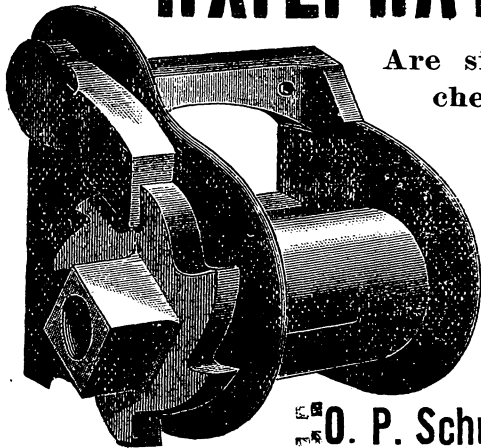
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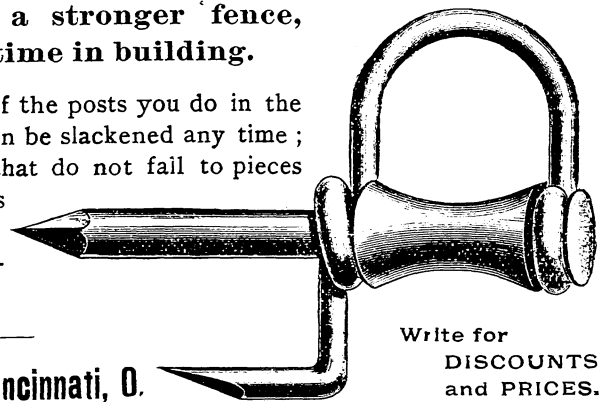
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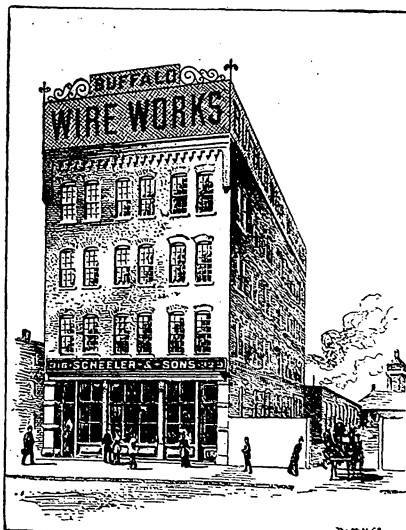
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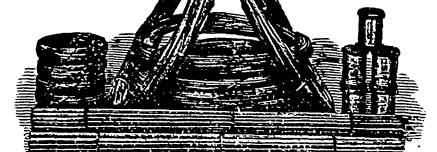
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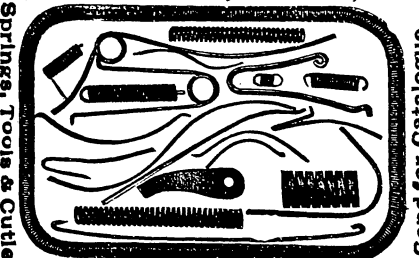
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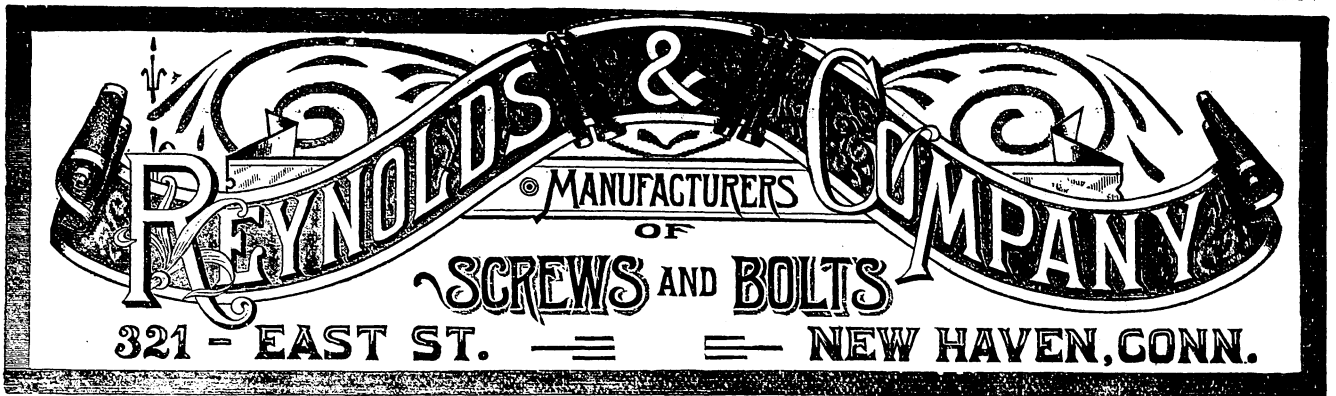
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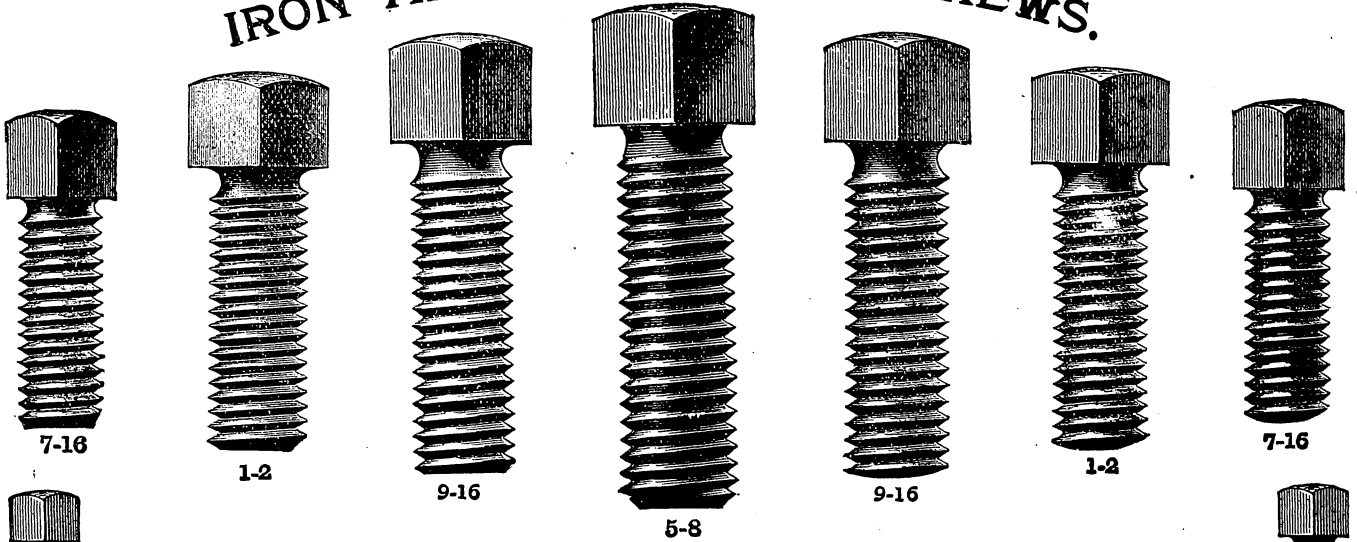


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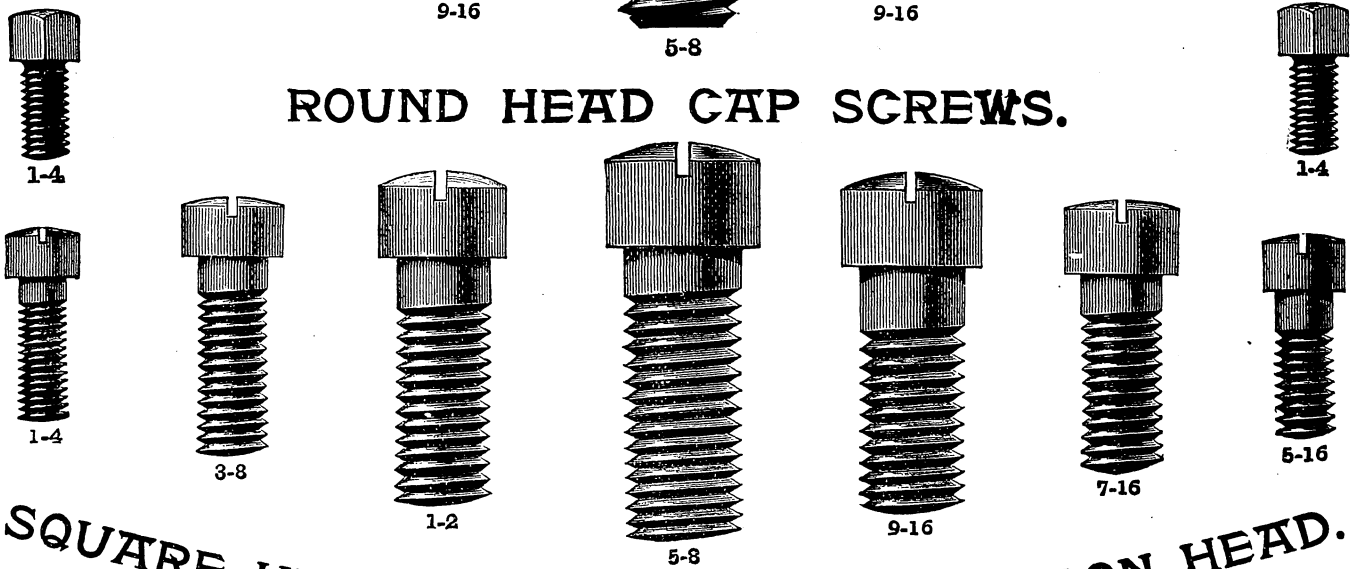
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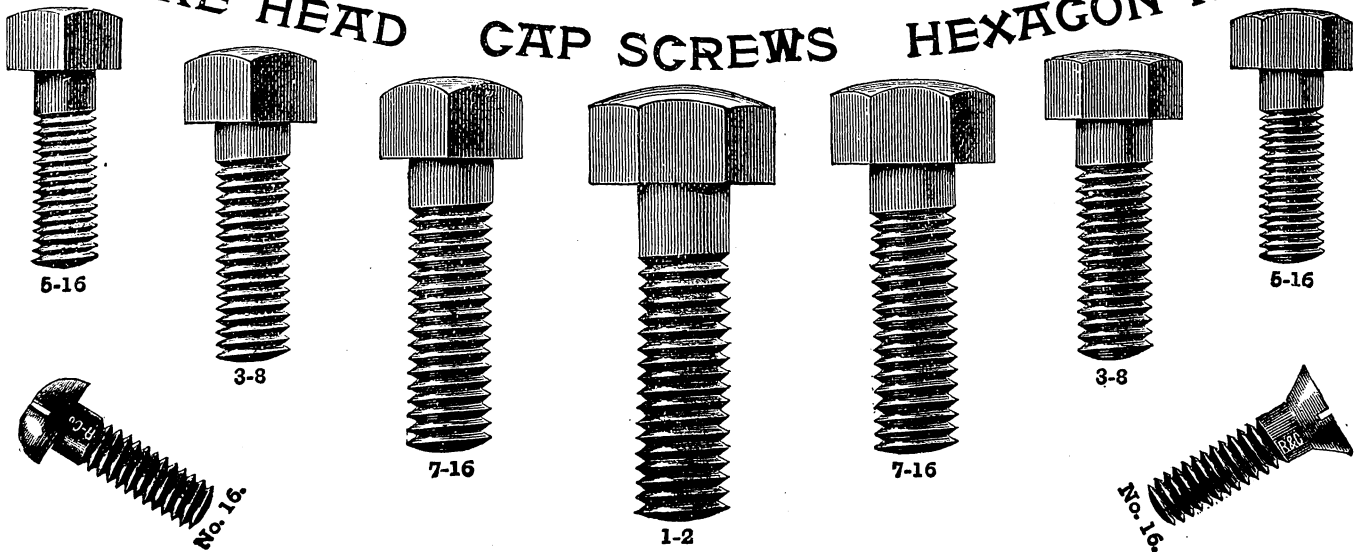
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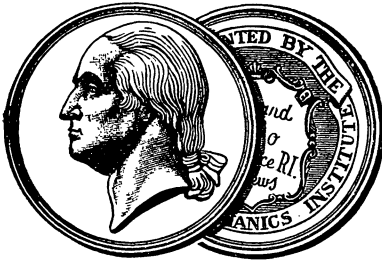
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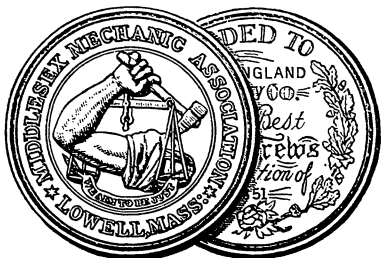
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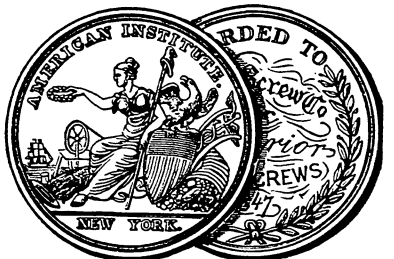
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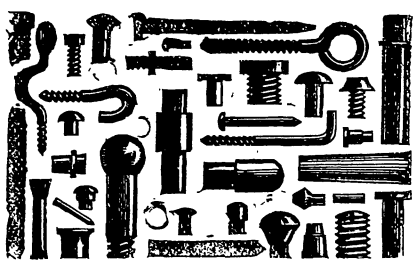
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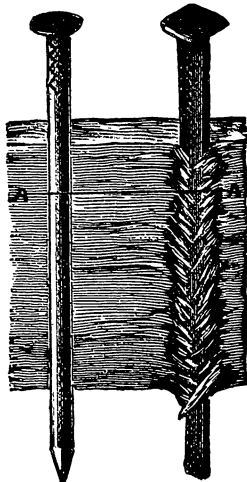
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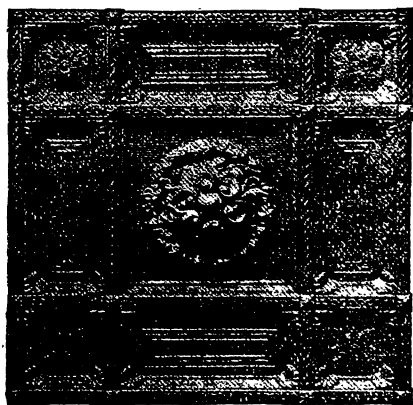
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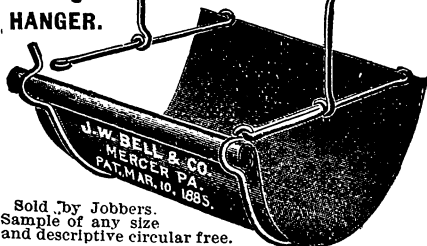
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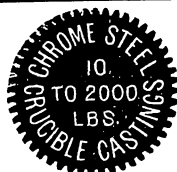
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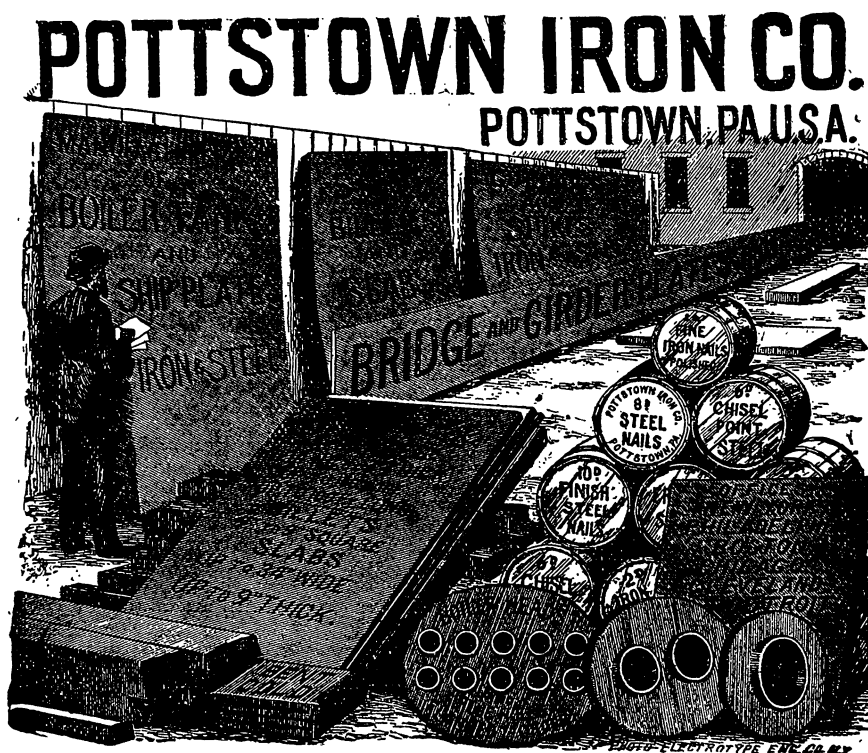
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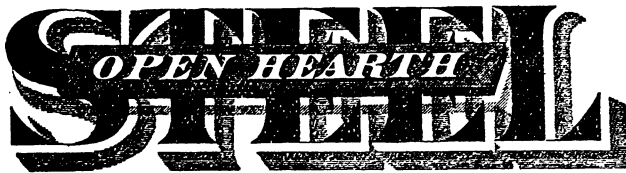
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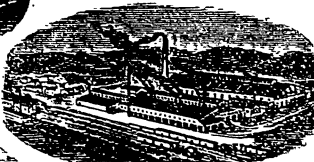
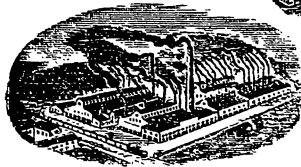
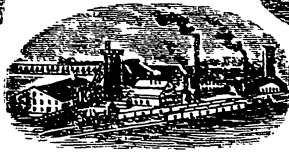
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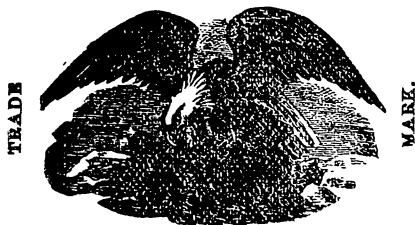
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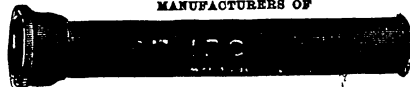
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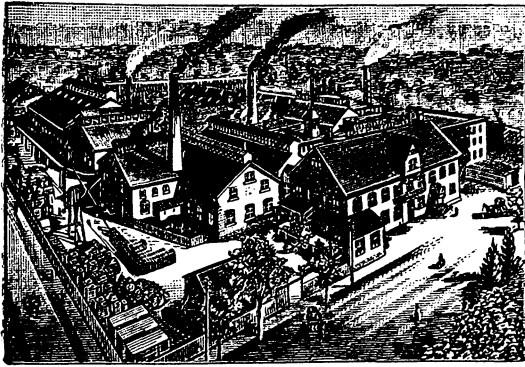
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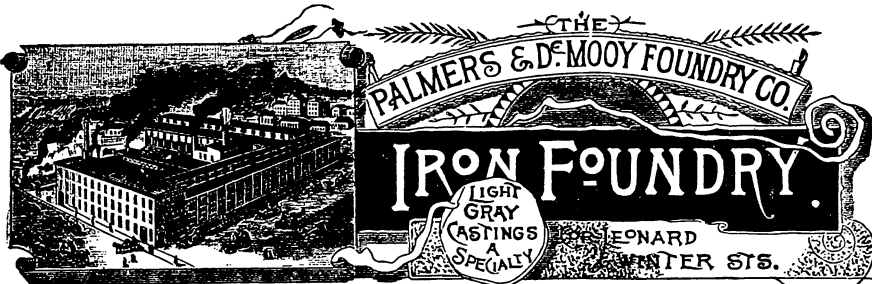
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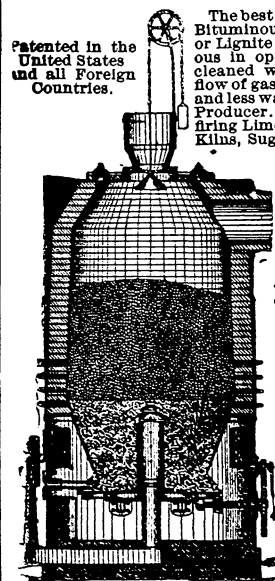
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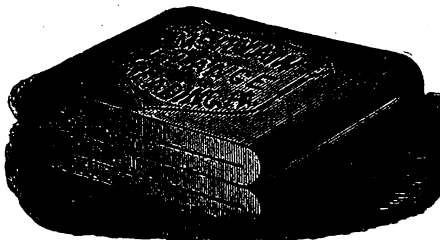
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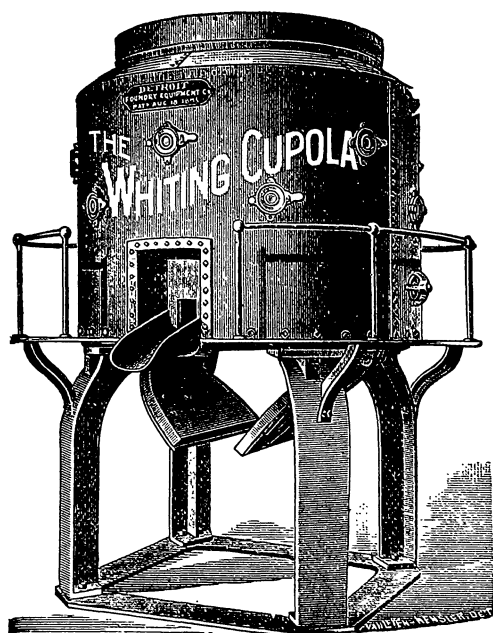
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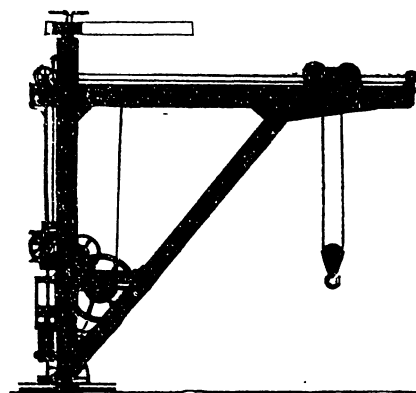
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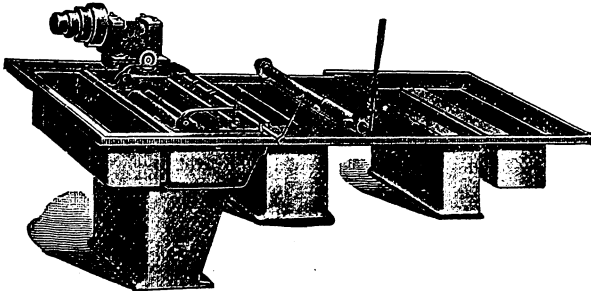
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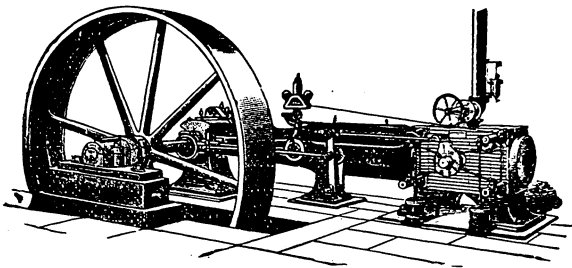
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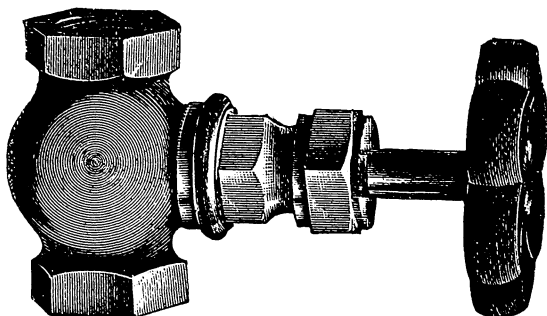
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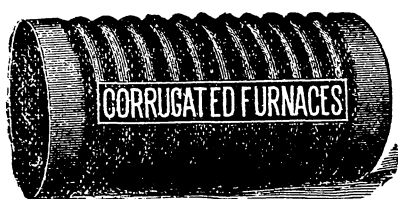
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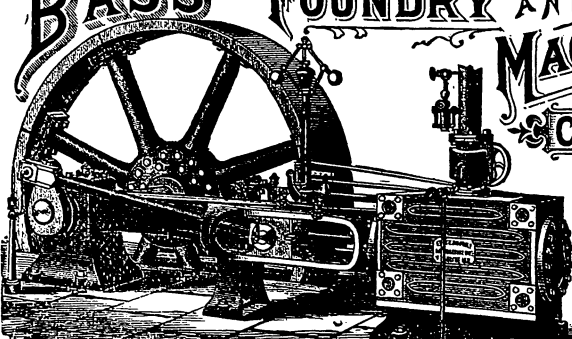
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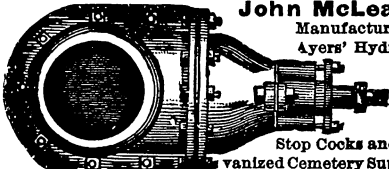
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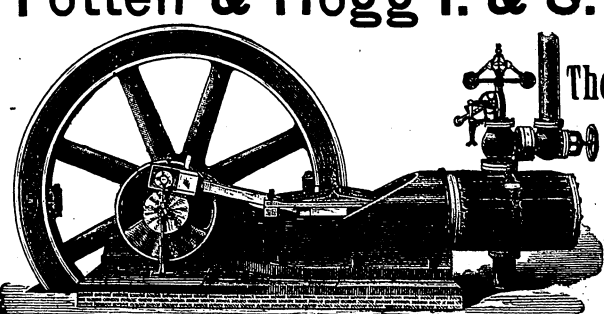


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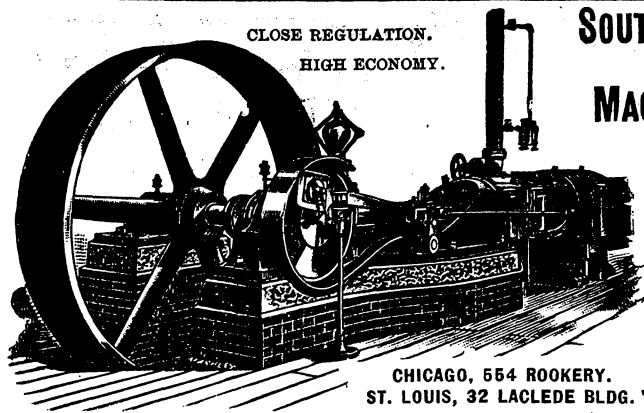
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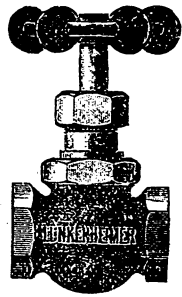
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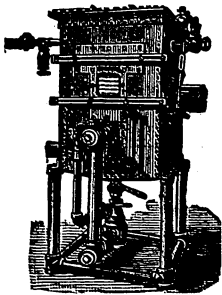
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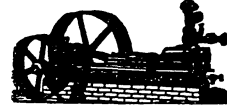


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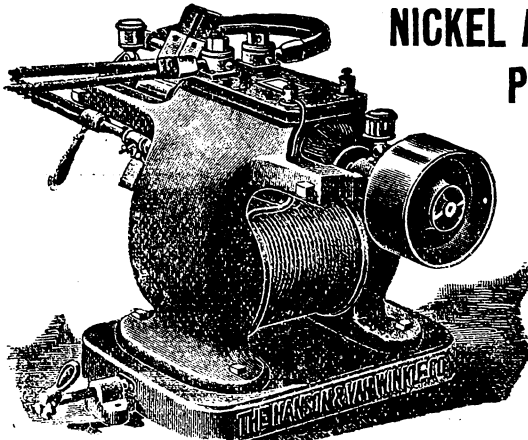
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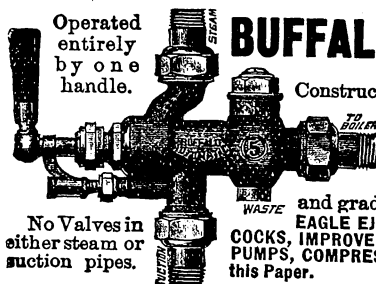
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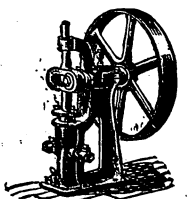
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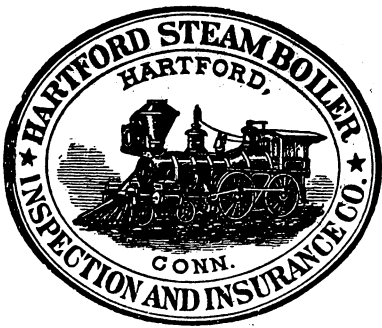
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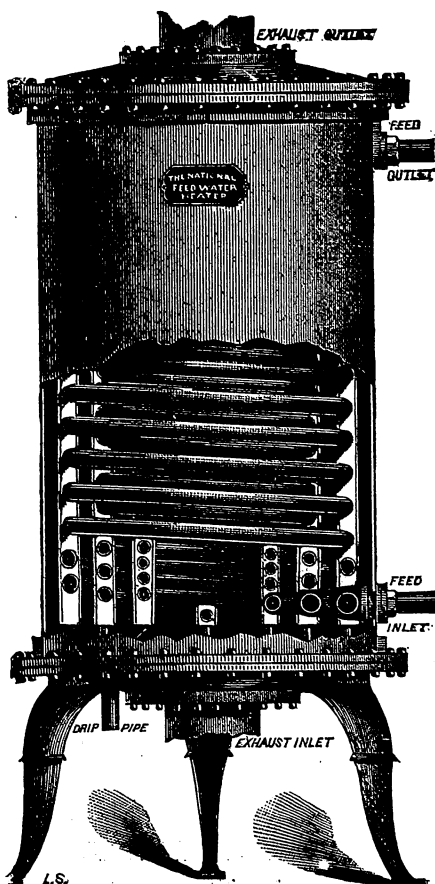
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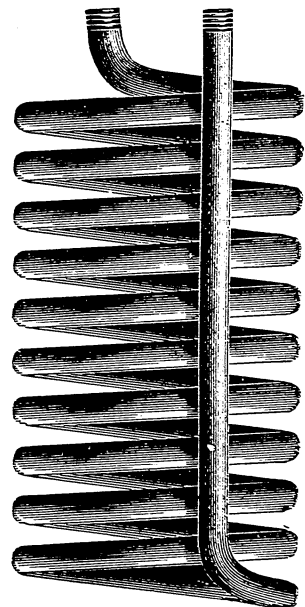
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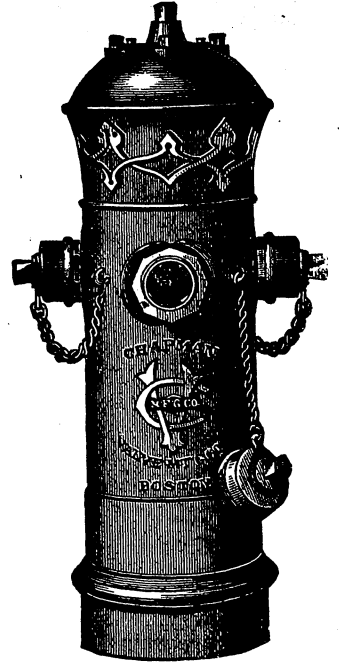
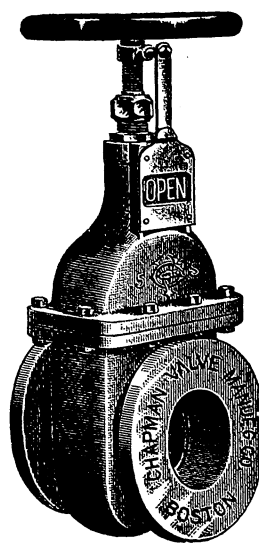
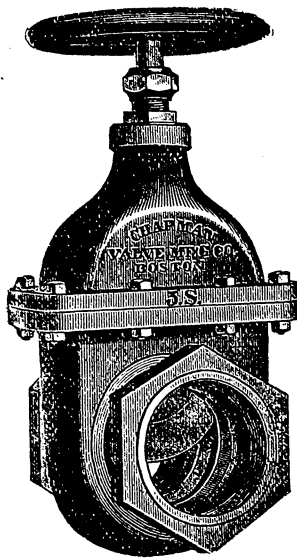
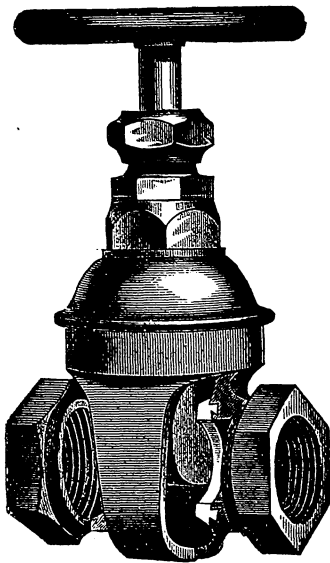


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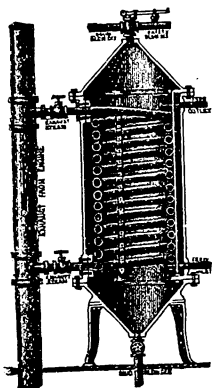
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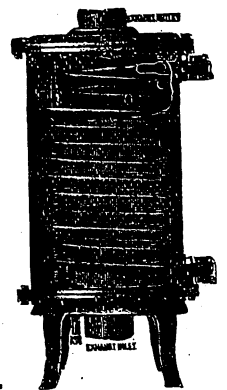
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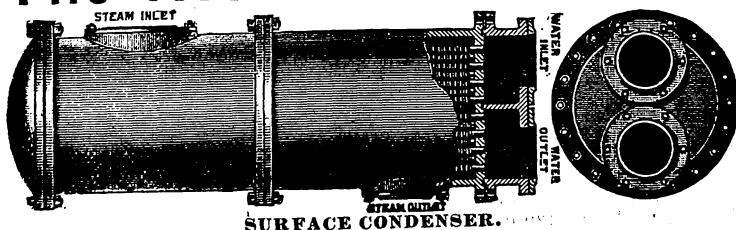
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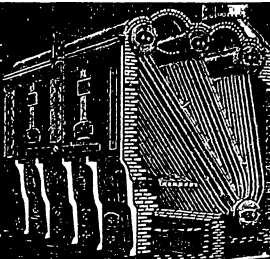


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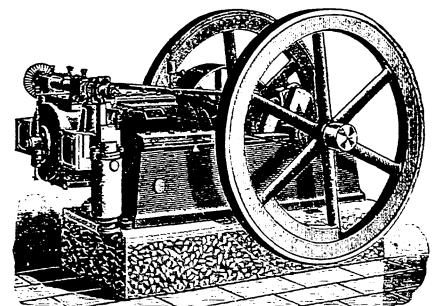
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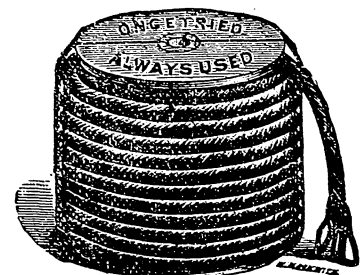
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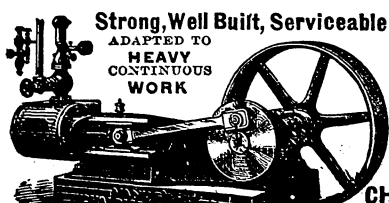
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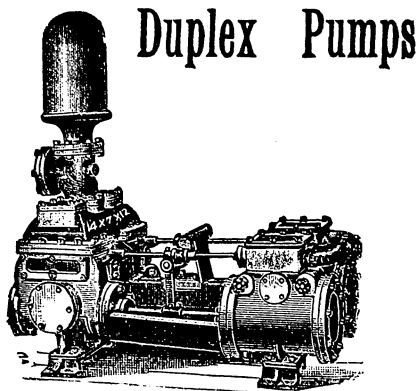


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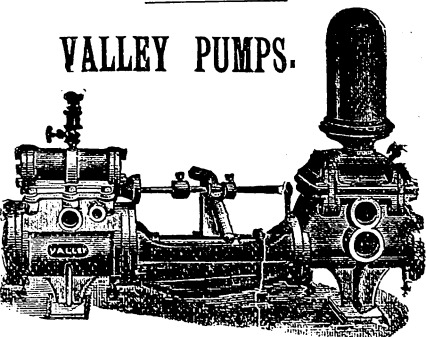
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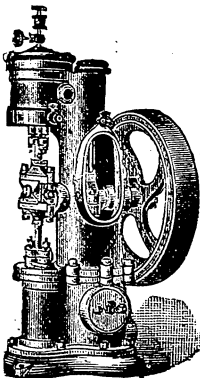
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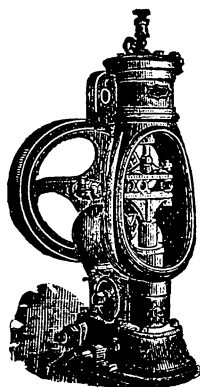


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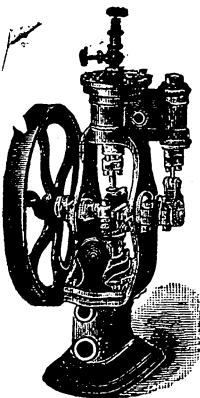
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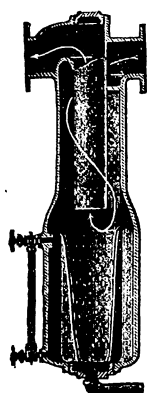
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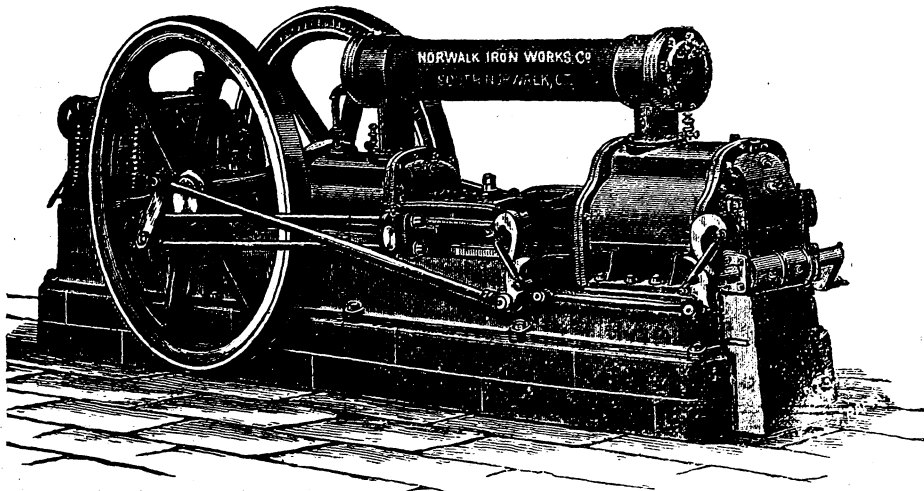
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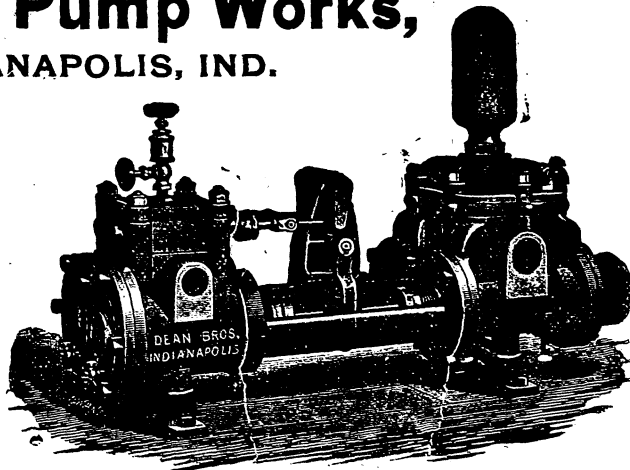
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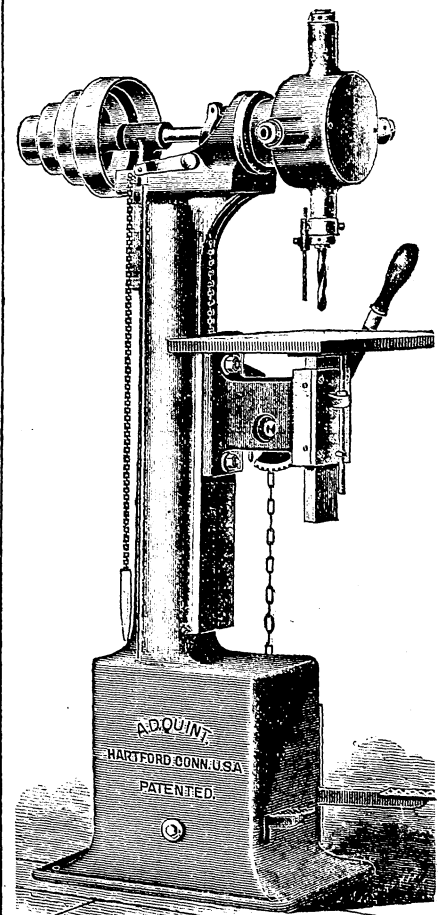
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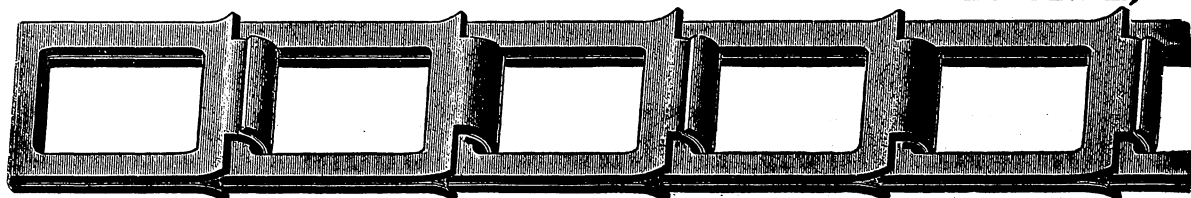
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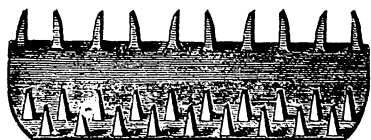


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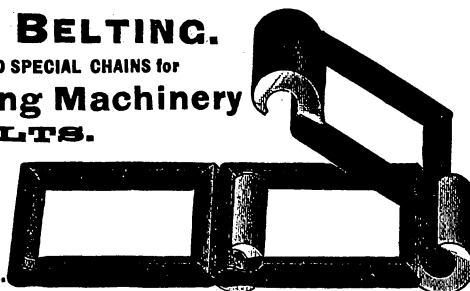
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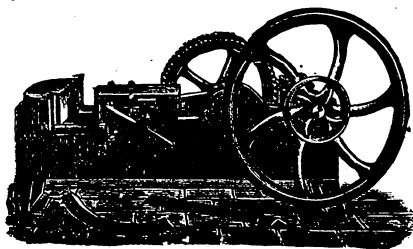
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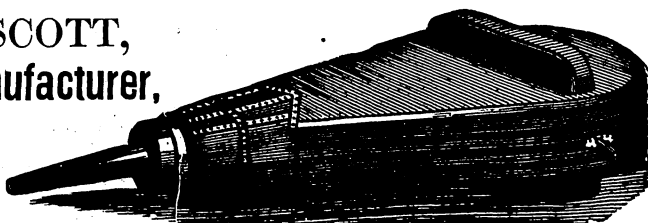
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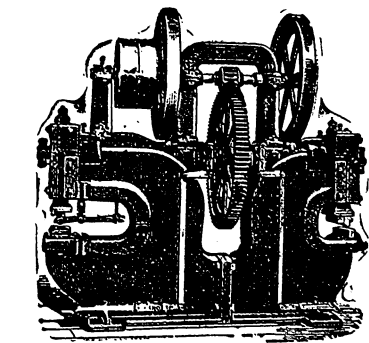
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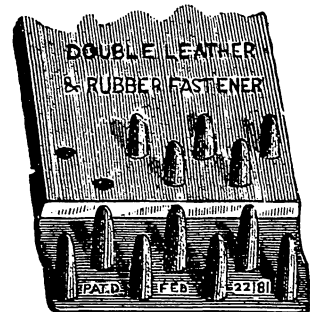
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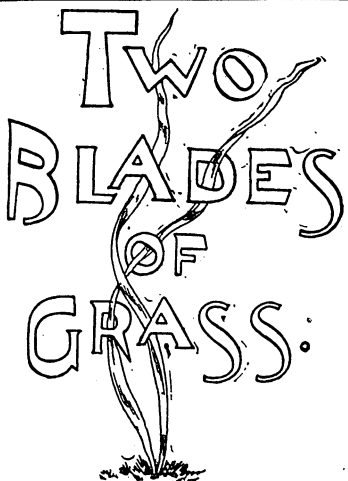
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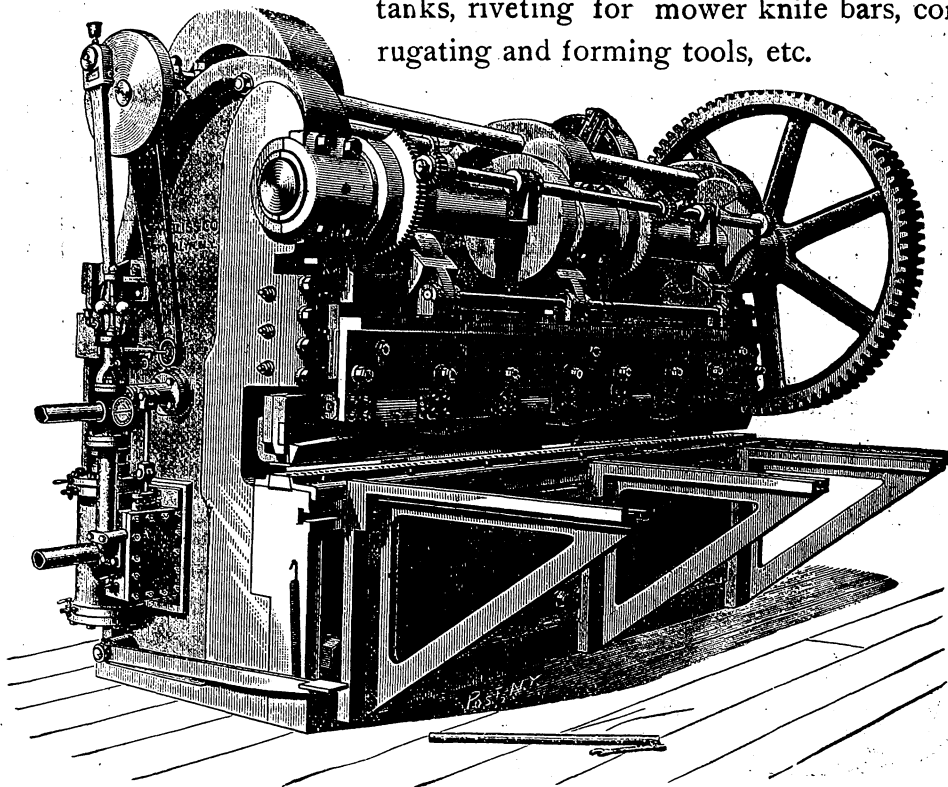
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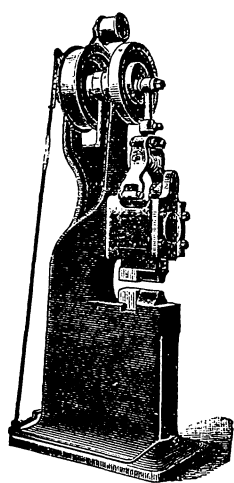


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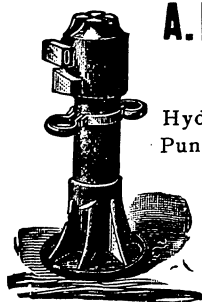
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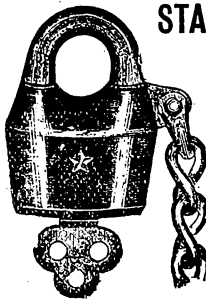


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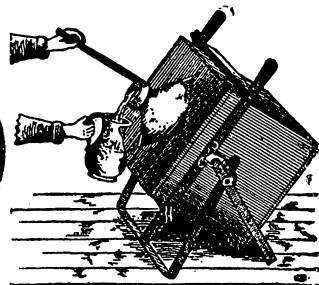
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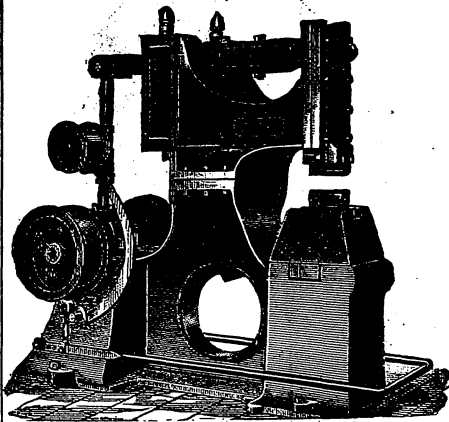
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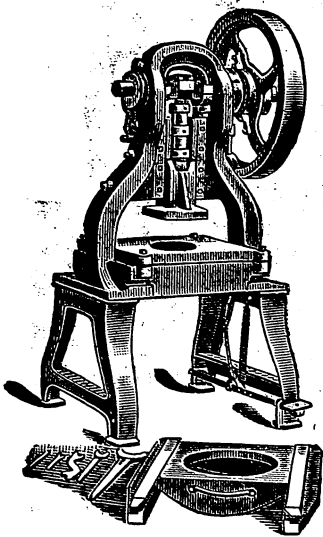
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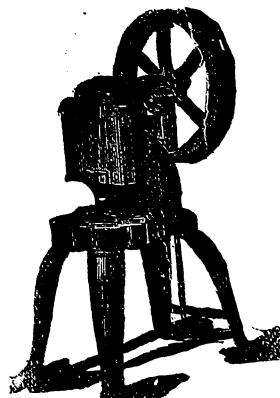
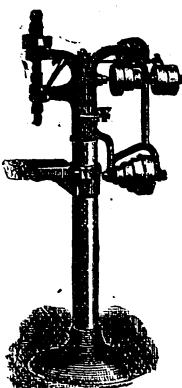


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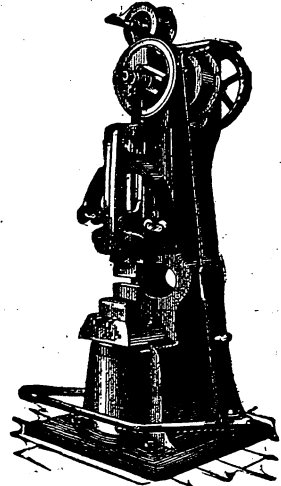
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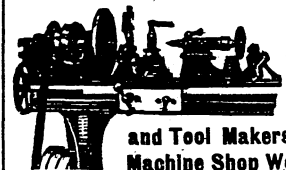
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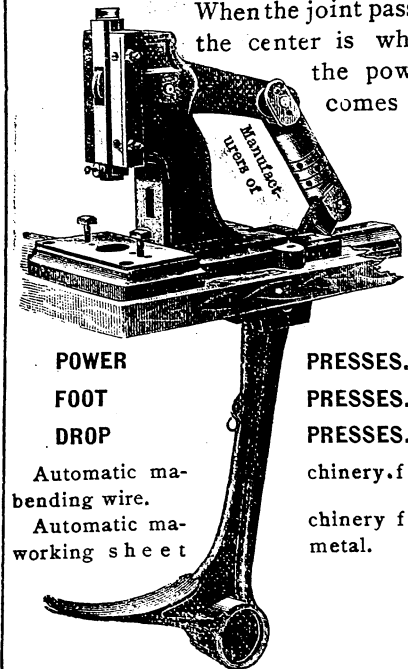
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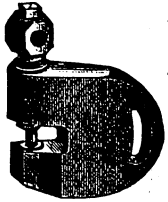
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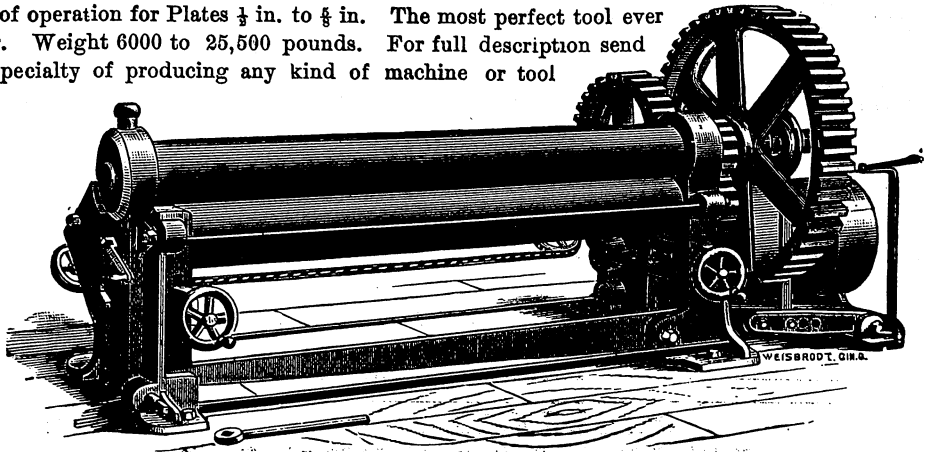
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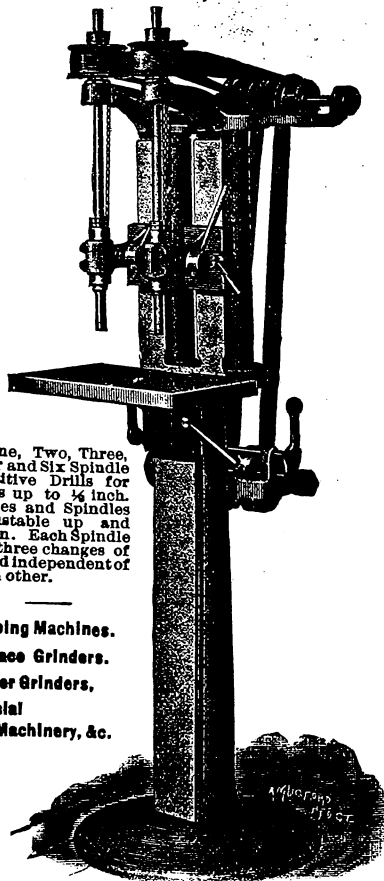
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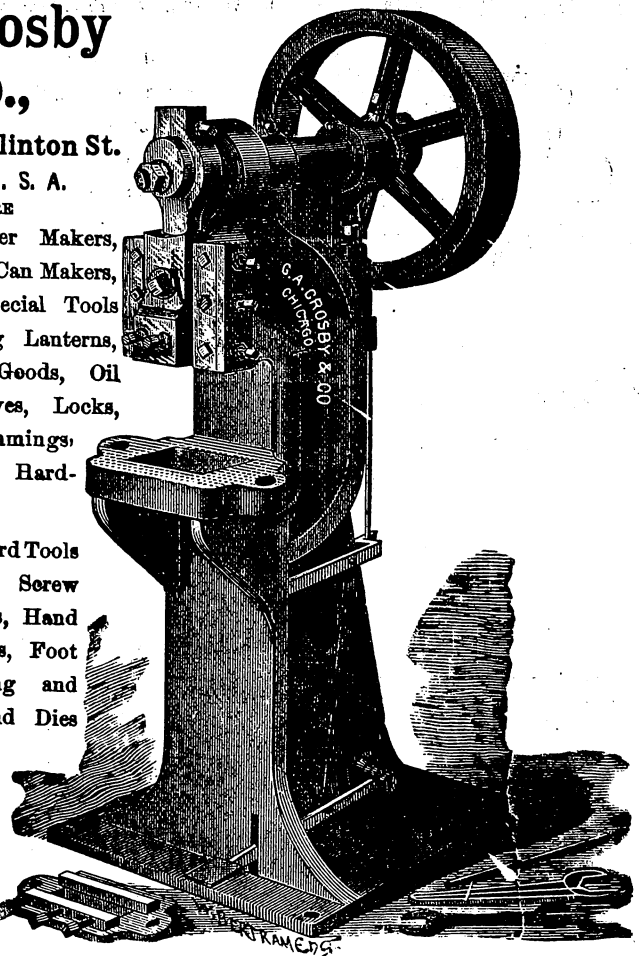
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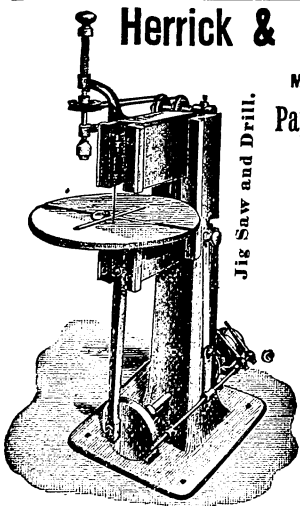
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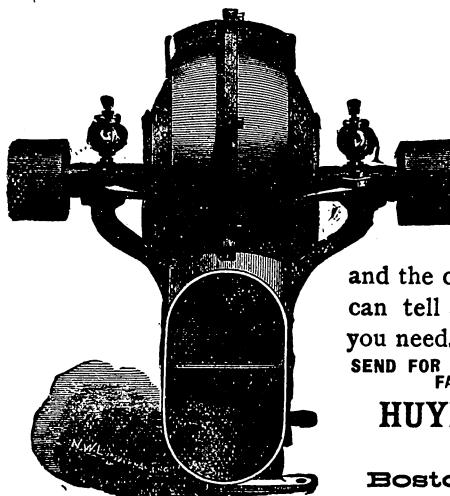


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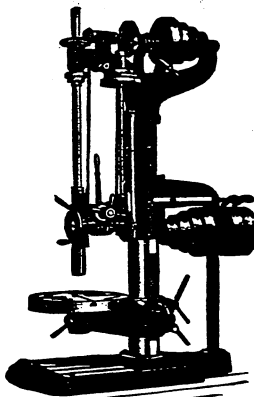
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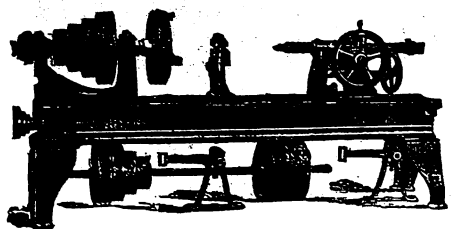
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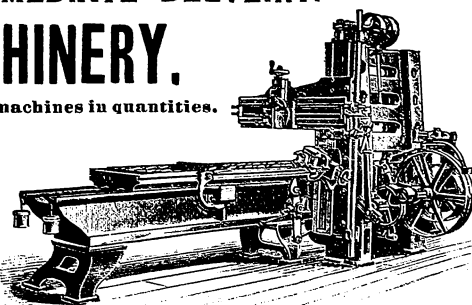
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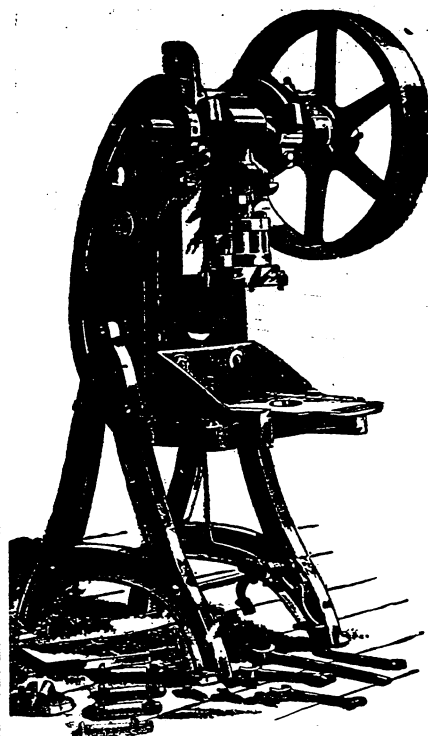
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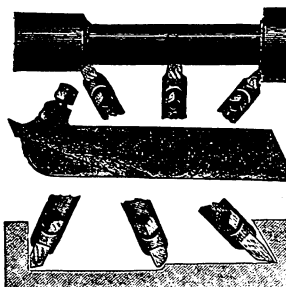
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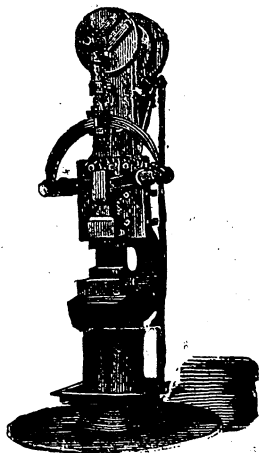
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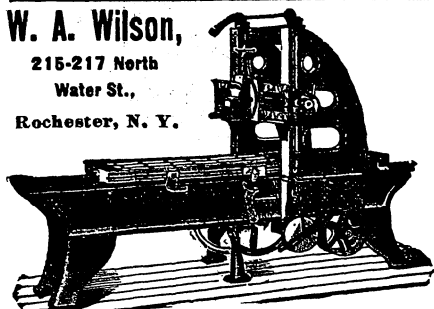
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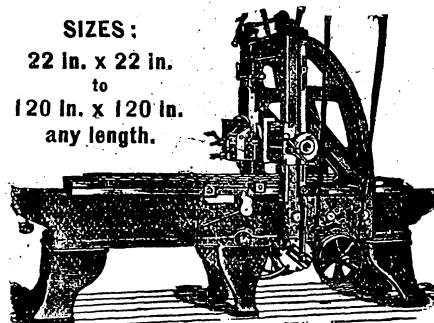
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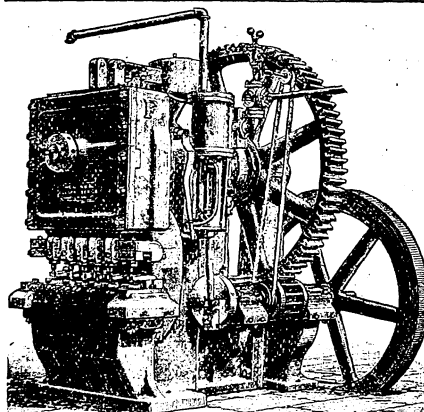
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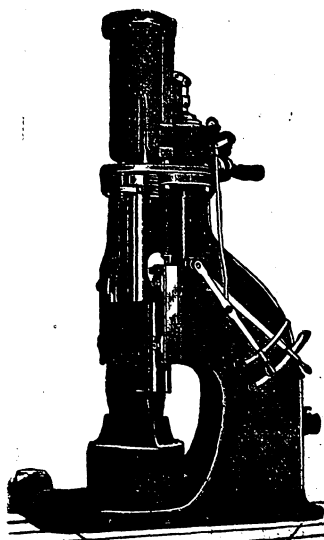
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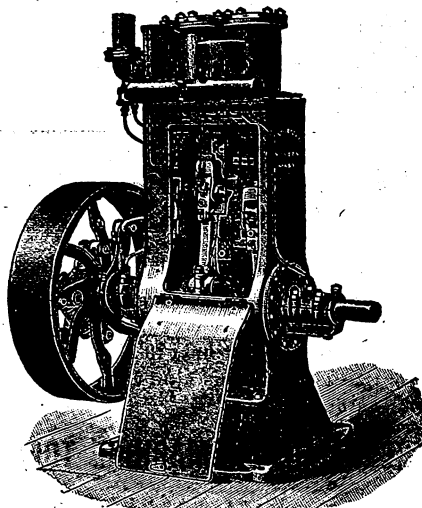
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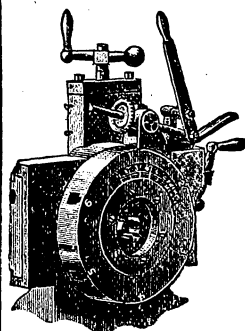
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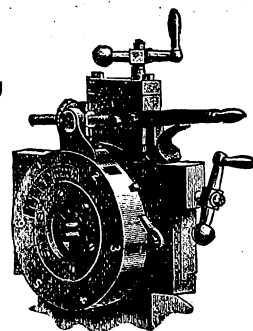
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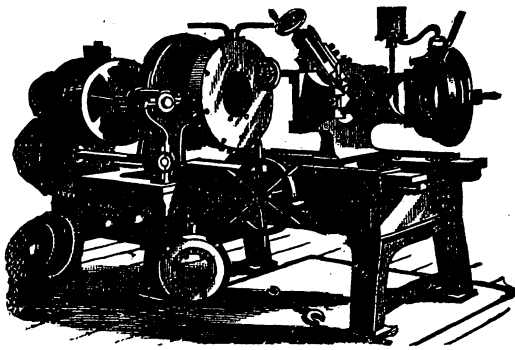
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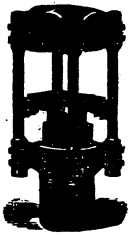
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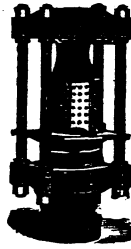
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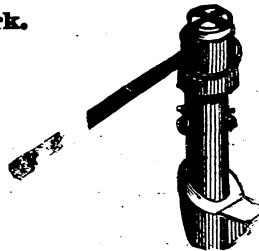
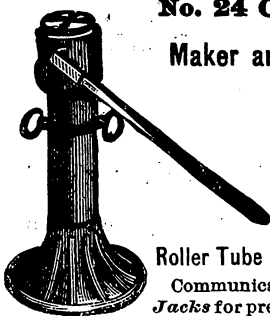
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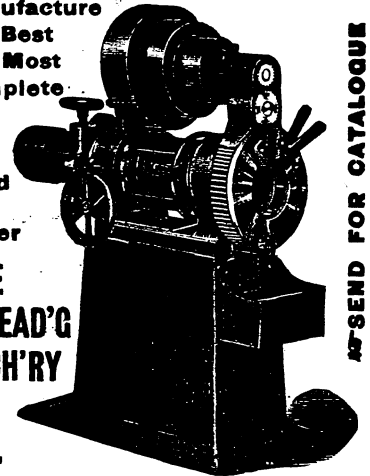
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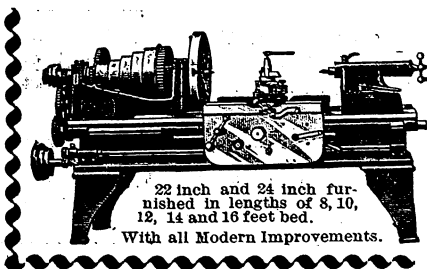
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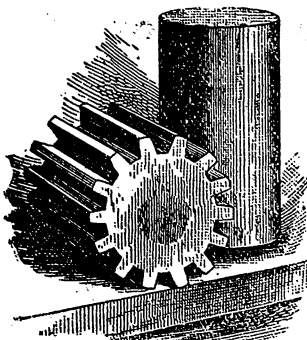
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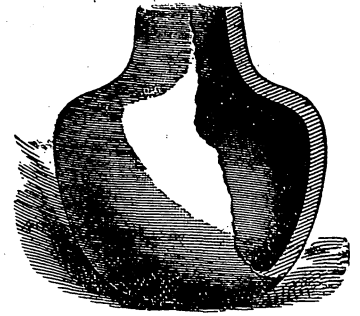


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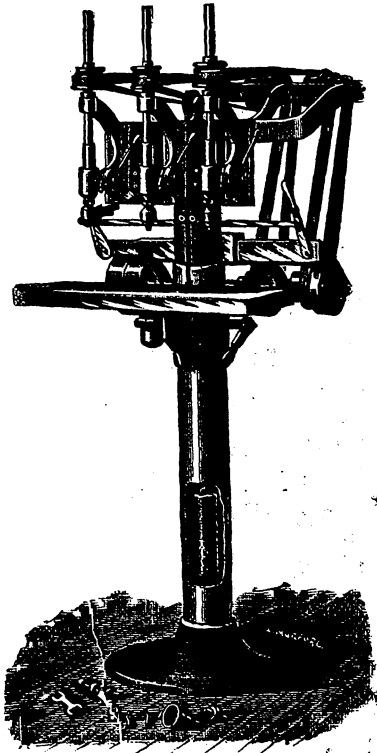
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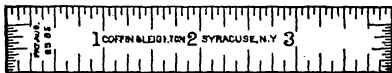
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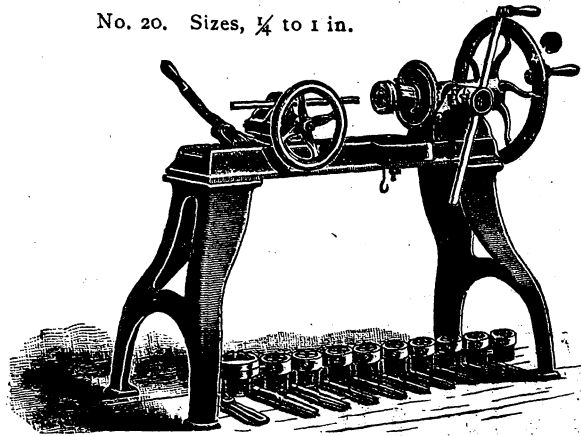
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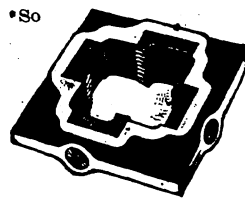
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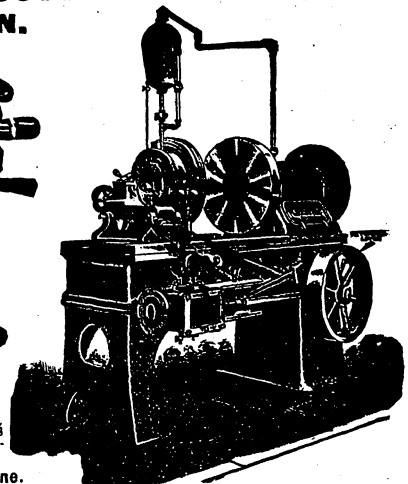
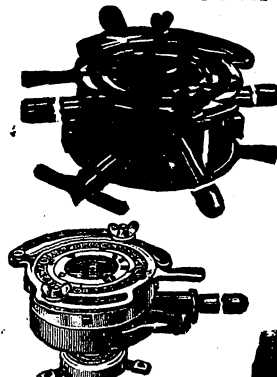
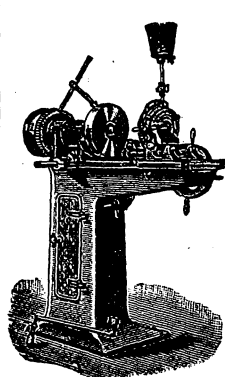
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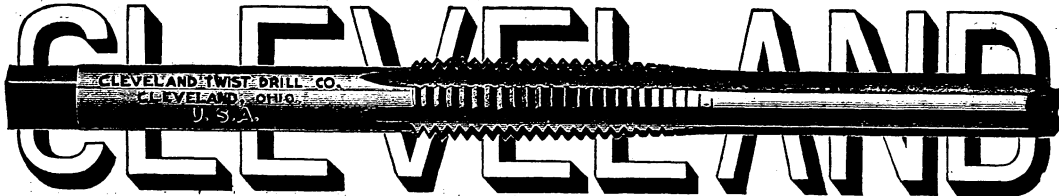
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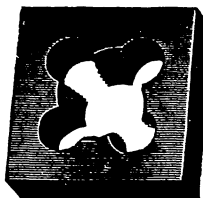
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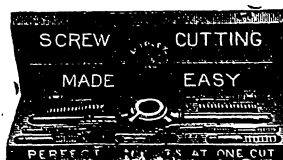
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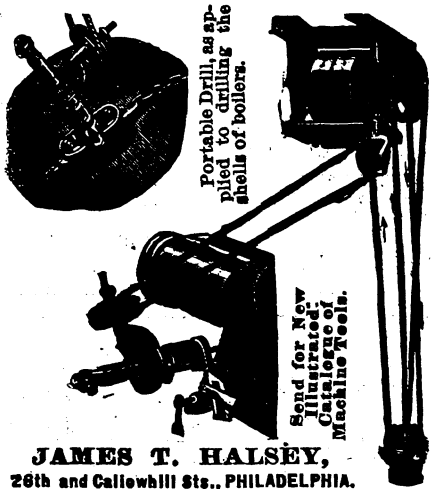
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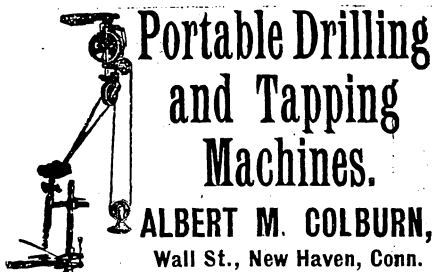
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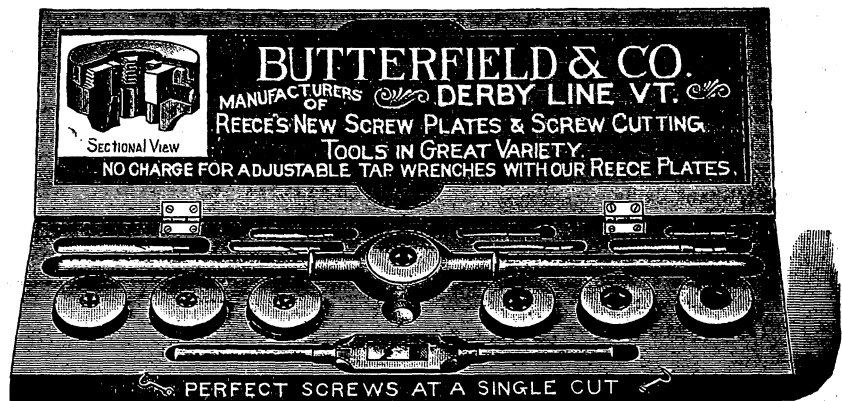


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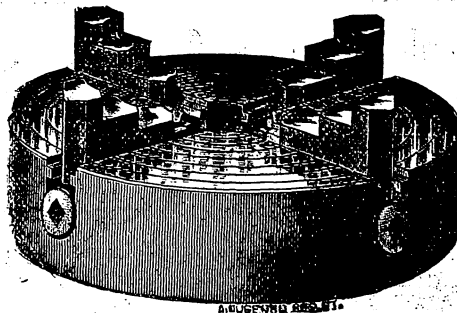
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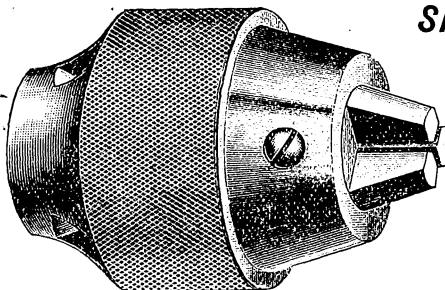
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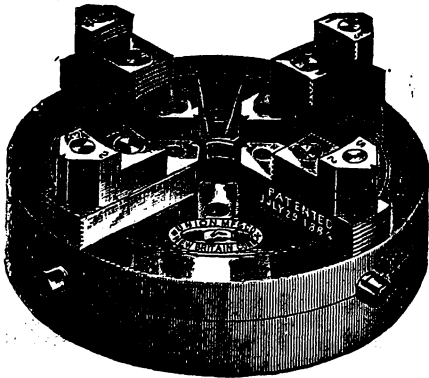
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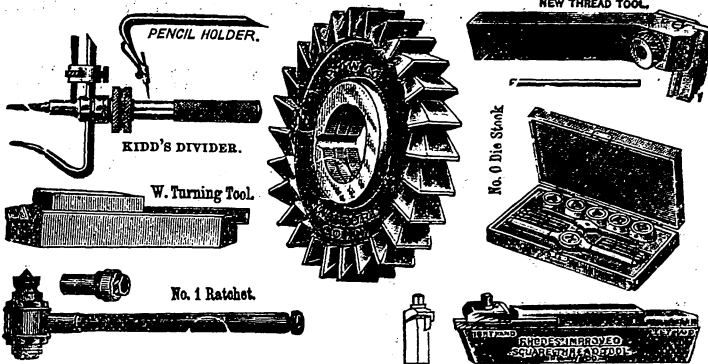
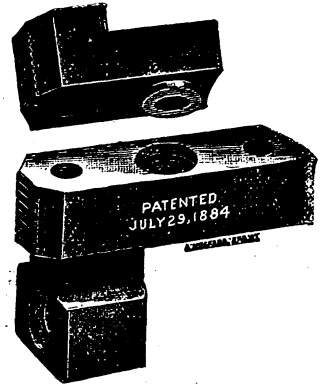
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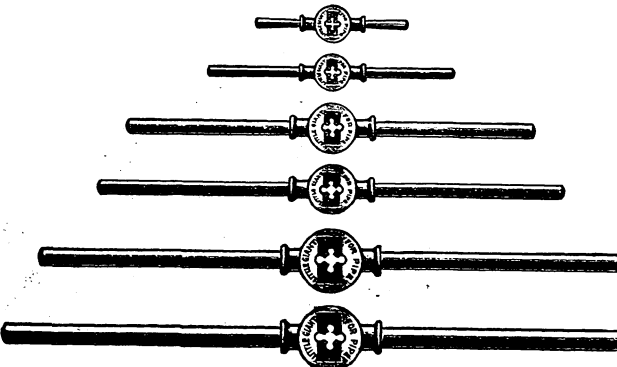
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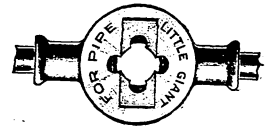
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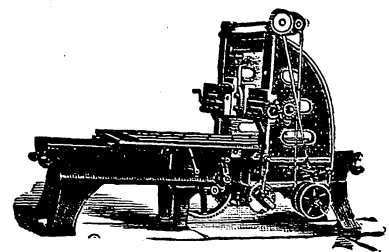
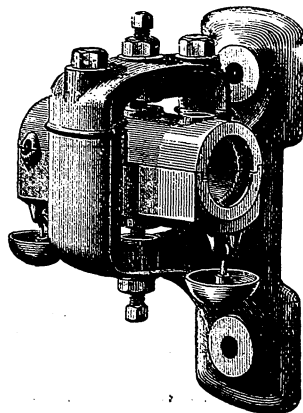
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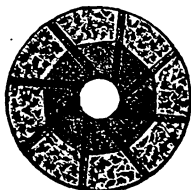
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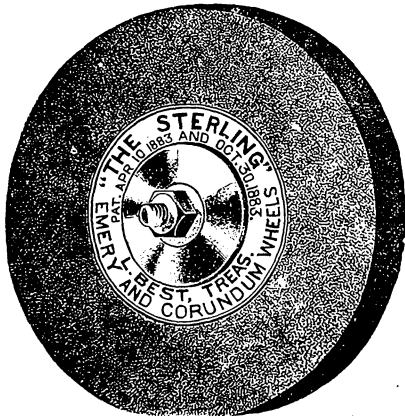
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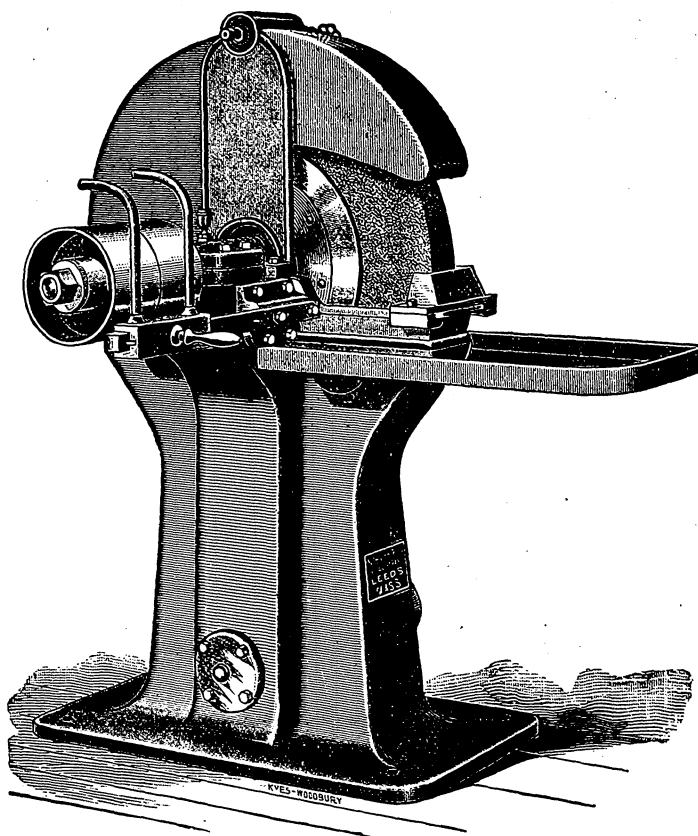
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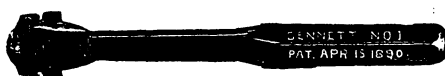
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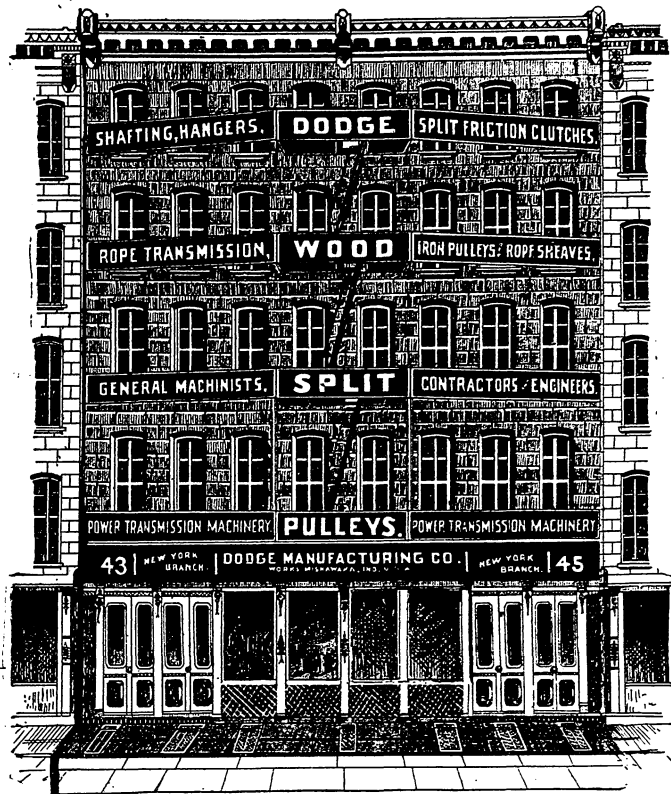
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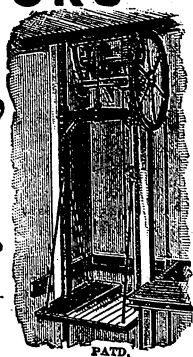
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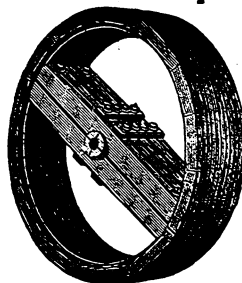
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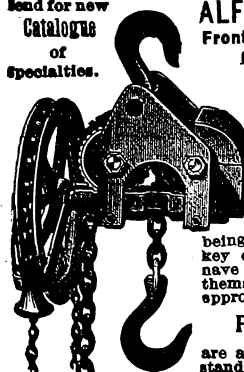
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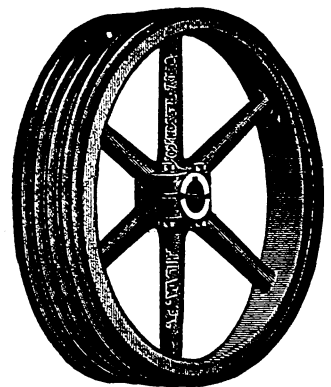
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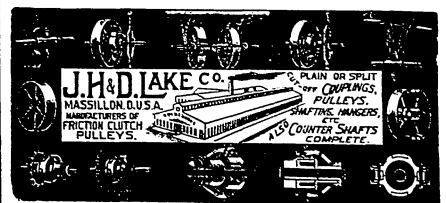
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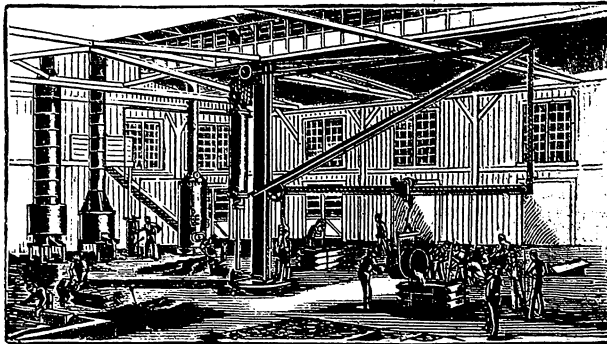
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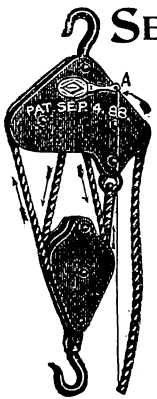
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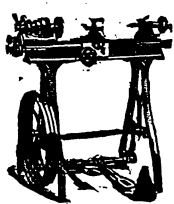
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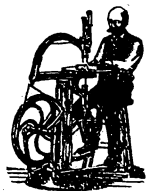
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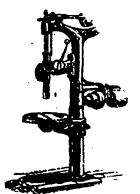
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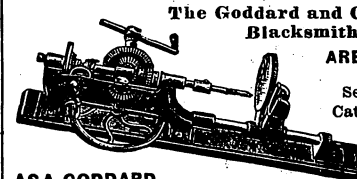
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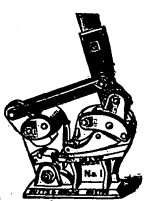
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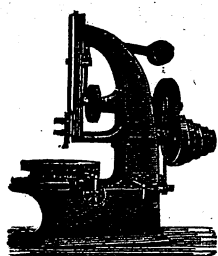
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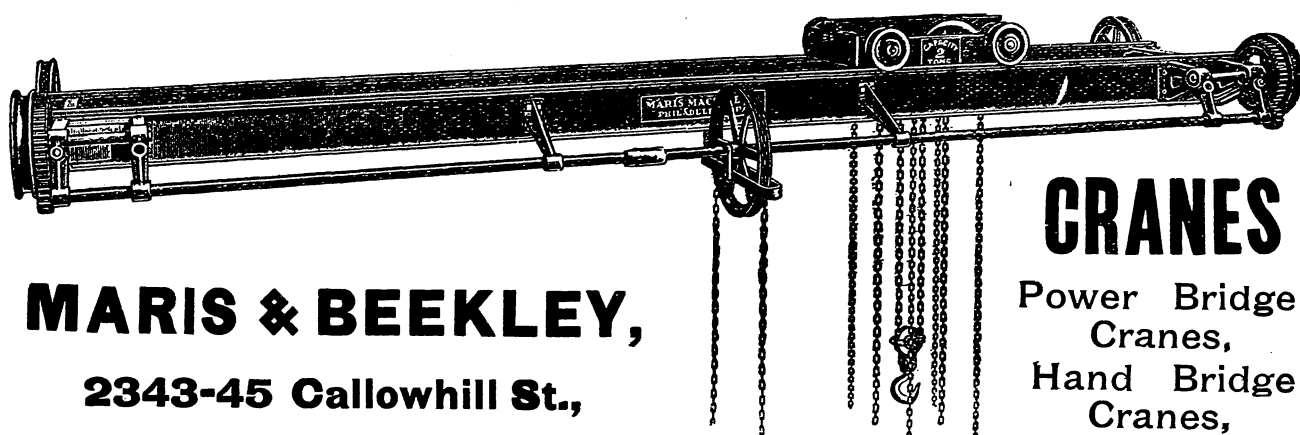
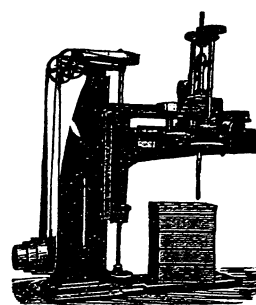
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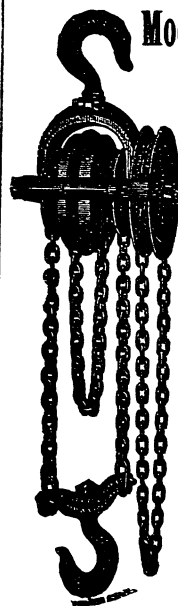
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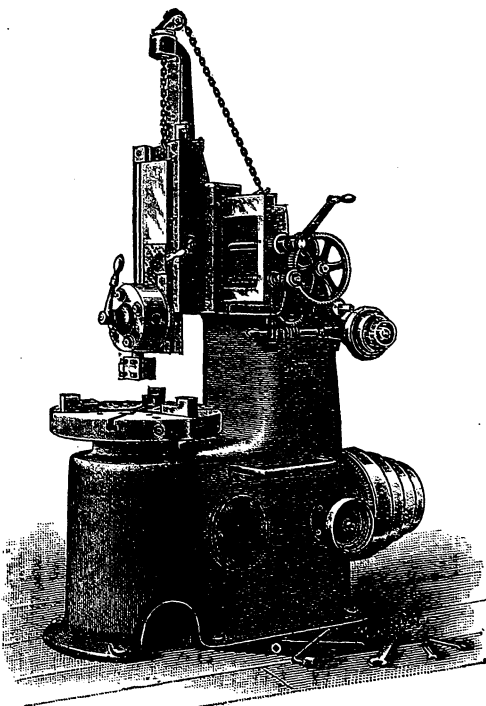


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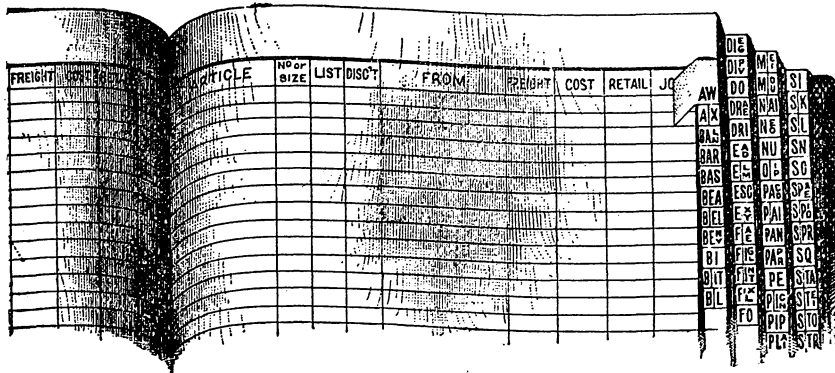
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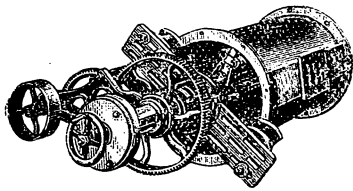
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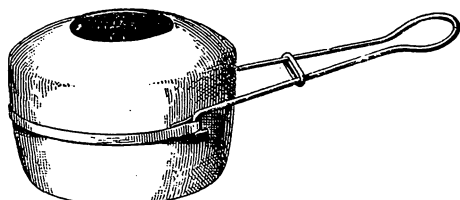


Fig. 108.—Clamp for Holding Tea Kettle while Being Tinned.

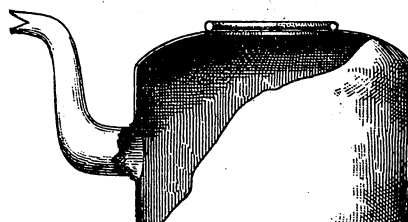


Fig. 110.—Tea-Kettle Showing Spout Attached.



Fig. 107.—Planishing Tea-Kettle Side.

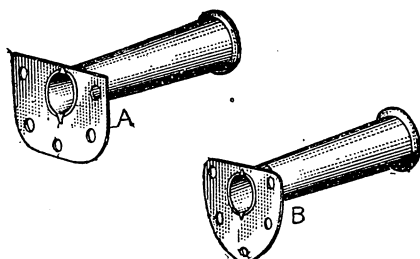


Fig. 54.—Way to Put the Flaps On.

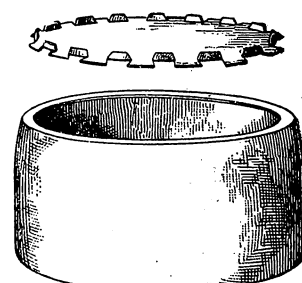


Fig. 105.—Putting in Bottom.

The above are Specimen Illustrations from "The Art of Coppersmithing," and indicate the Practical Nature of the Treatise, and how it Goes into All the Details of Workmanship.

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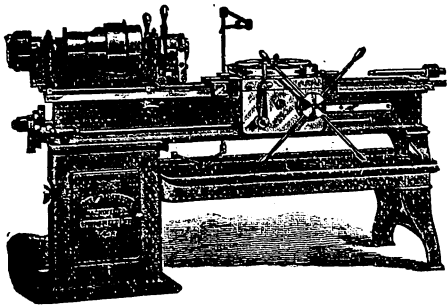
† I cannot at this time recall anything that such "vitalization" may not benefit.

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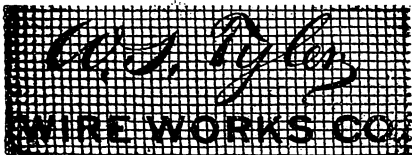


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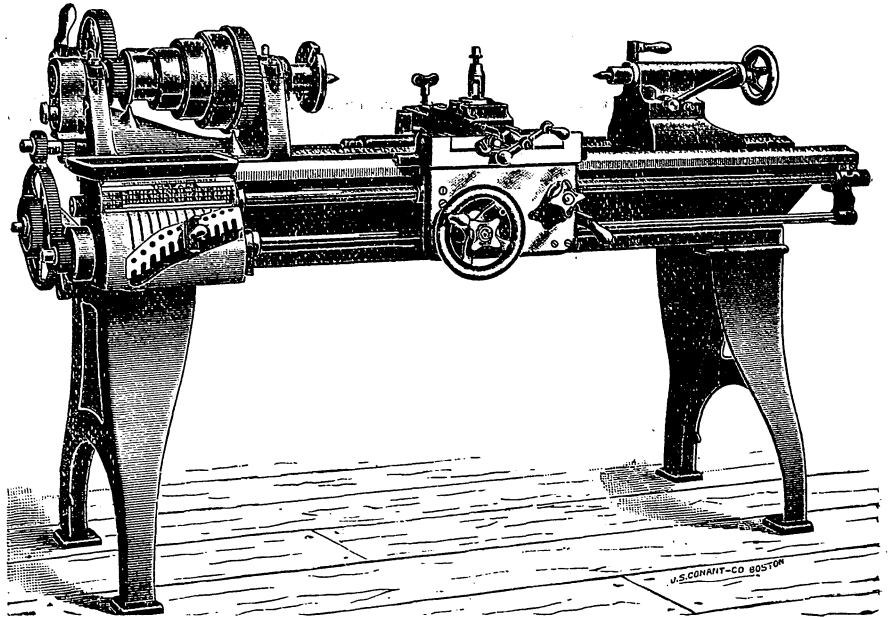
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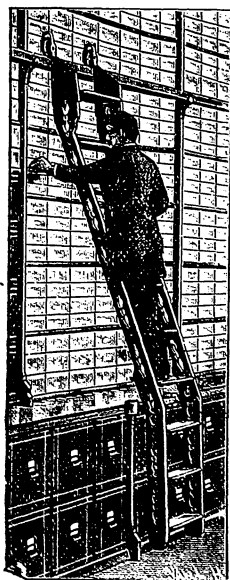
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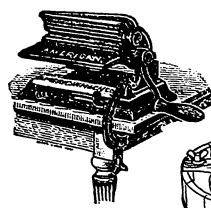
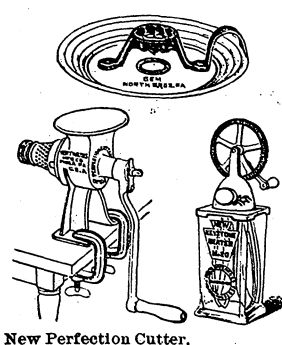
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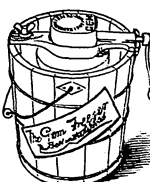
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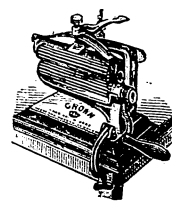
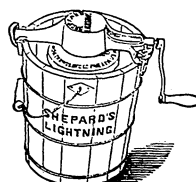
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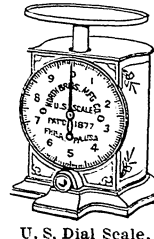
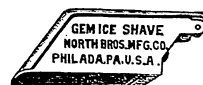
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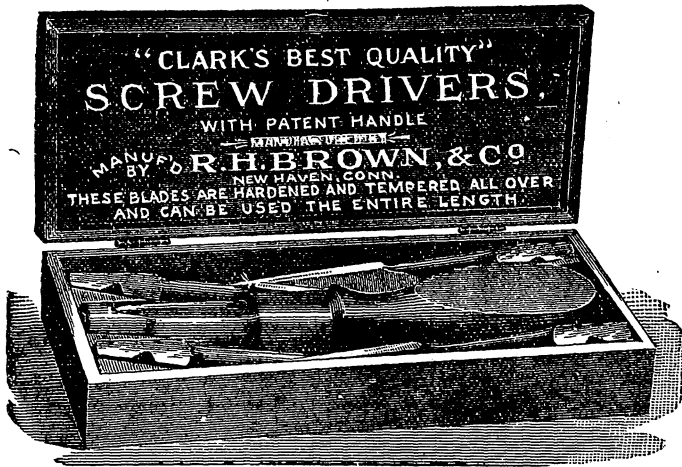
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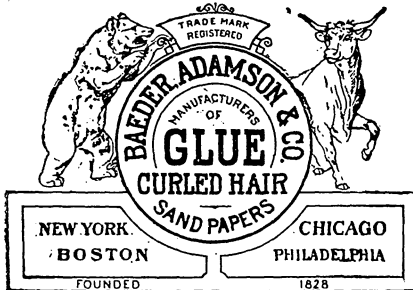
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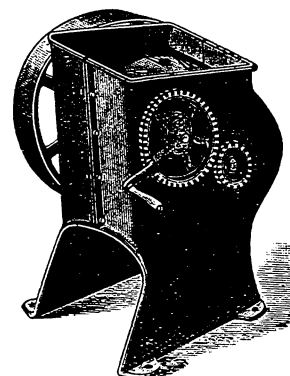
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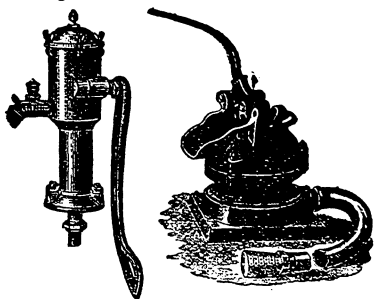
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Fig. 209.

Fig. 381.

Fig. 145.



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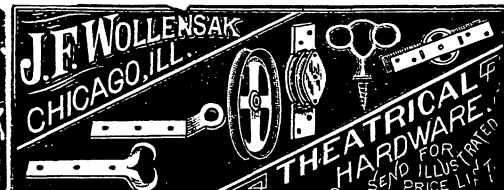
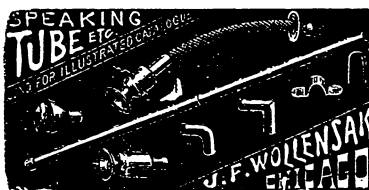
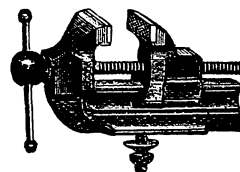
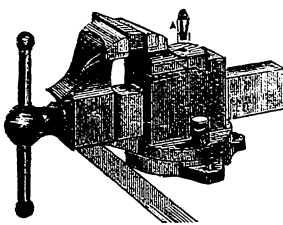
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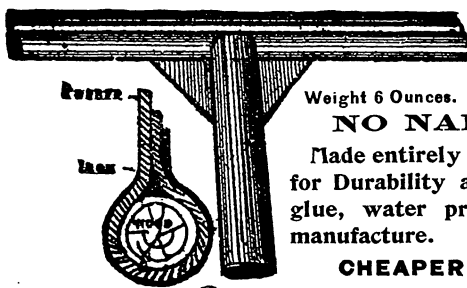
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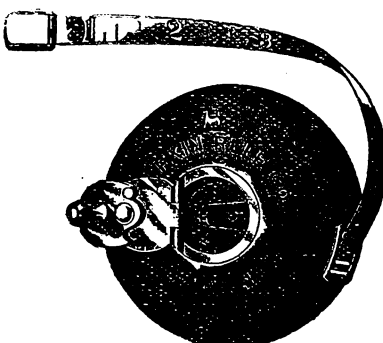
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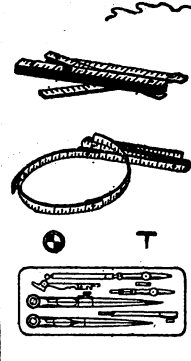
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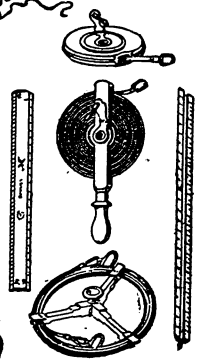
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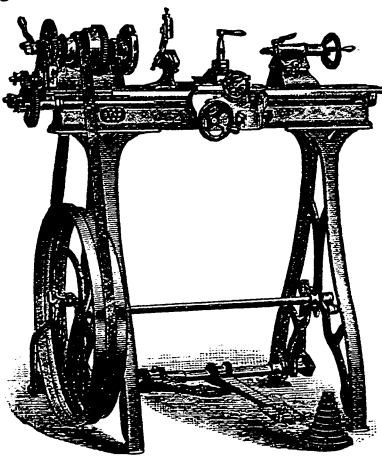
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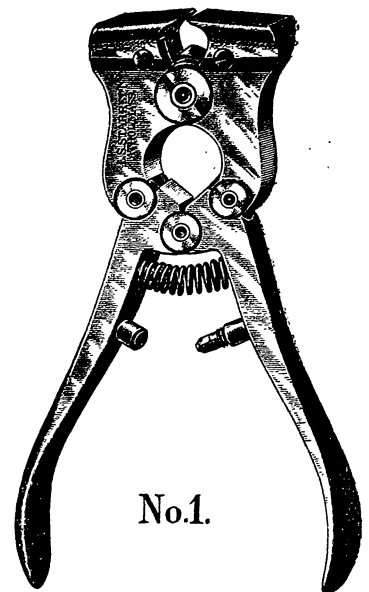
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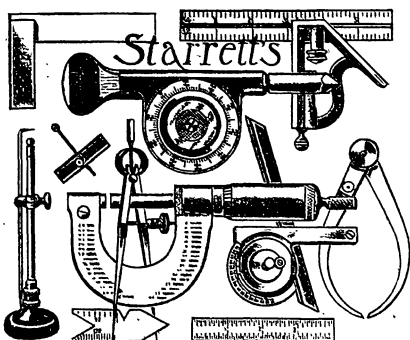
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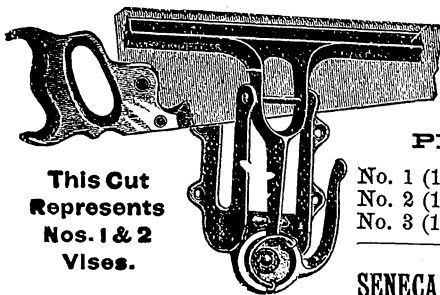
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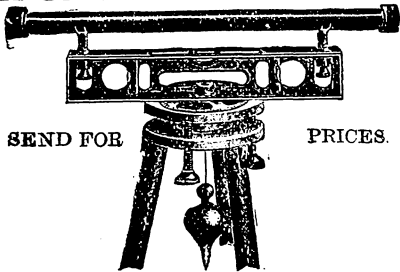


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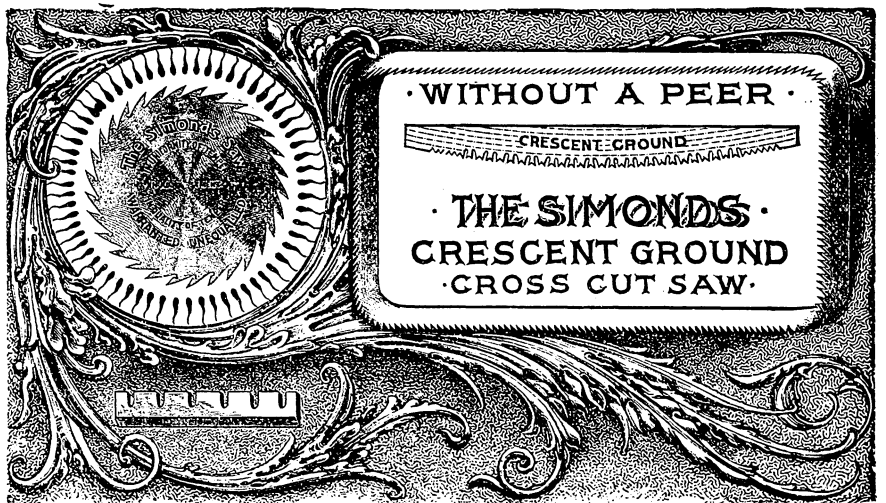
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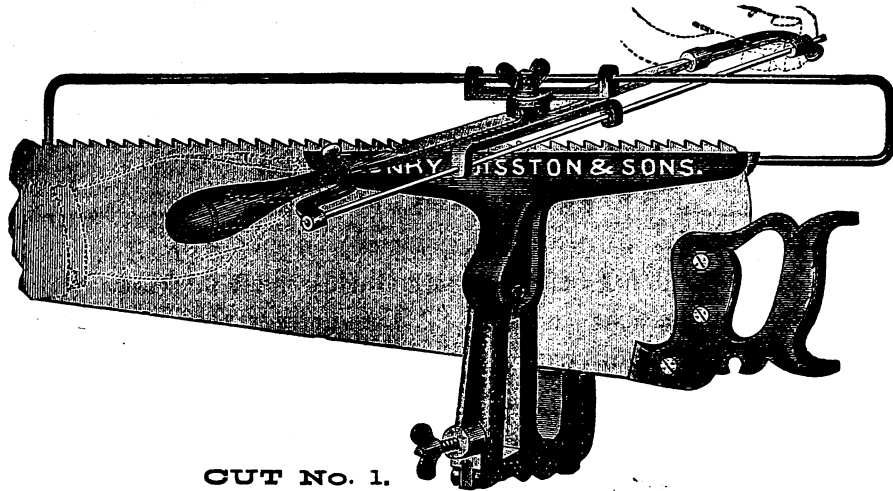
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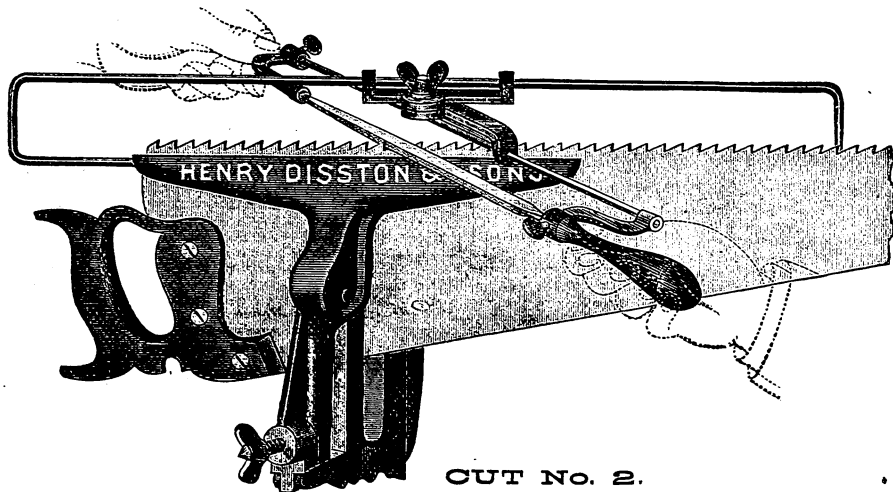
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ESPECIALLY DESIGNED TO ASSIST THOSE NOT SKILLED IN THE ART
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Cut No. 1 shows a saw and the attachment in proper position for filing the first side; and Cut No. 2 shows the saw and attachment reversed and in position to file the second side. There are three marks on one of the hubs of the swivel attachment, and one mark on the other. One of the three marks shows when it is in position No. 1, and the other designates when it is in position as shown in No. 2. The third, or centre, marks show when it is in position for filing Rip Saws.



CUT No. 2.

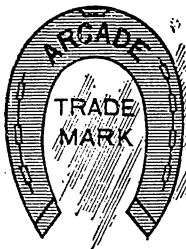
To obtain the correct position, loosen the wing nut and move the guide around to the point desired; after tightening wing nut, loosen screw in file handle, then turn handle until file gives the shape tooth wanted.

A good way is to select a tooth of correct shape and let file down into it, tighten set screw in handle, then file a tooth to see if the shape suits. If not turn the file a little to the right or left and try another tooth until the proper shape is obtained. Then file every other tooth, see cut No. 1; when one side is filed, reverse saw and attachment and adjust as in No. 2, and file the other teeth. For Rip Saws, place the file at right angles with the saw and file every tooth. Always keep the file as nearly horizontal as possible.

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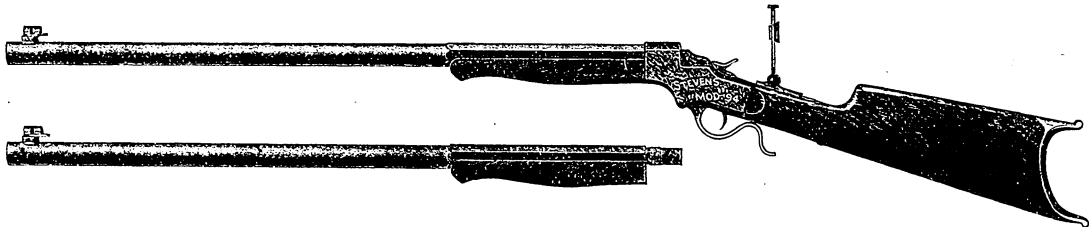
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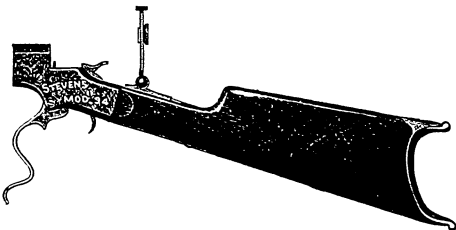
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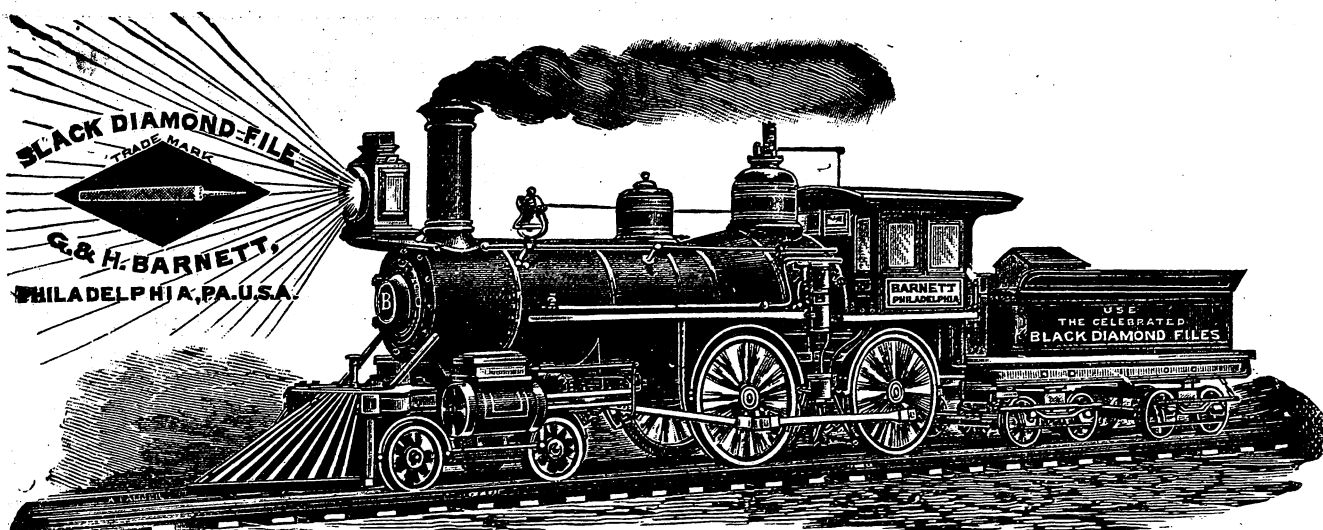
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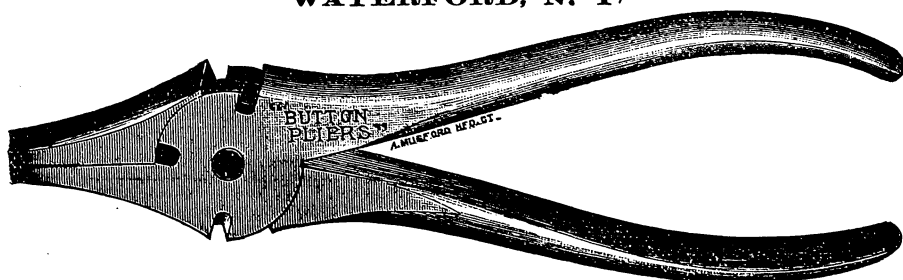
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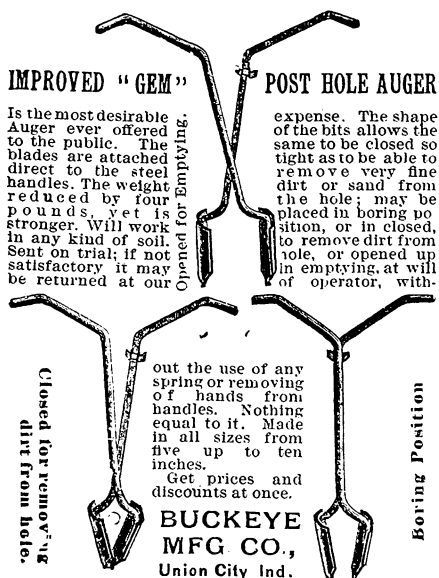
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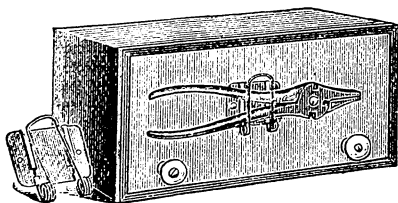
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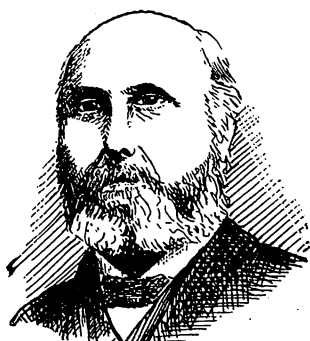
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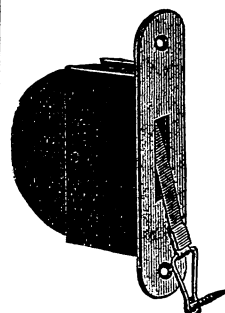
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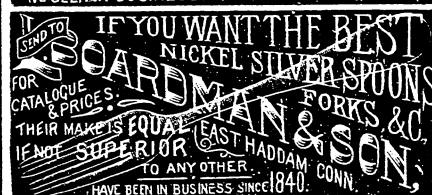
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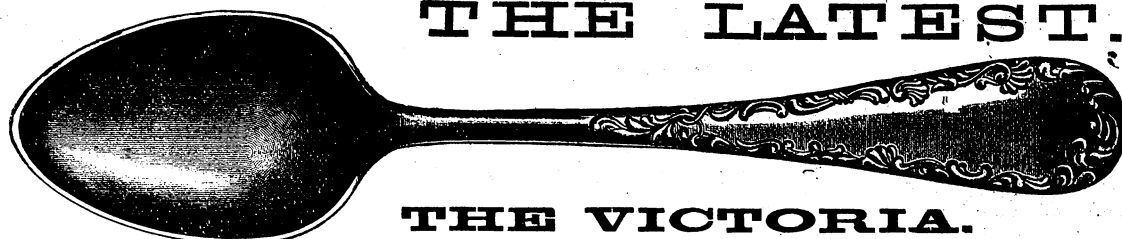
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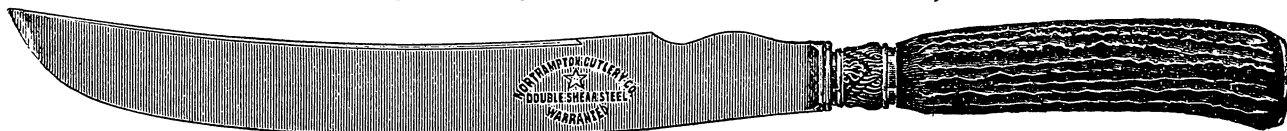
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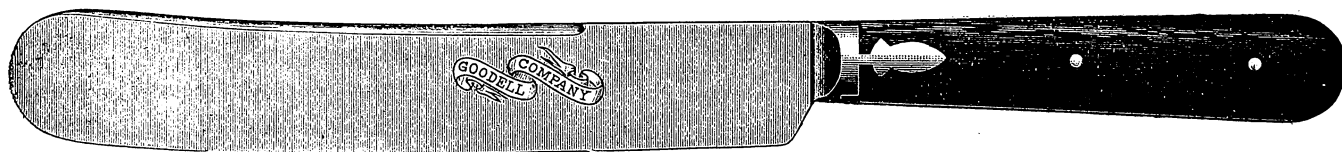
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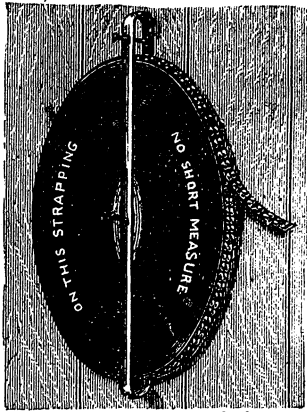
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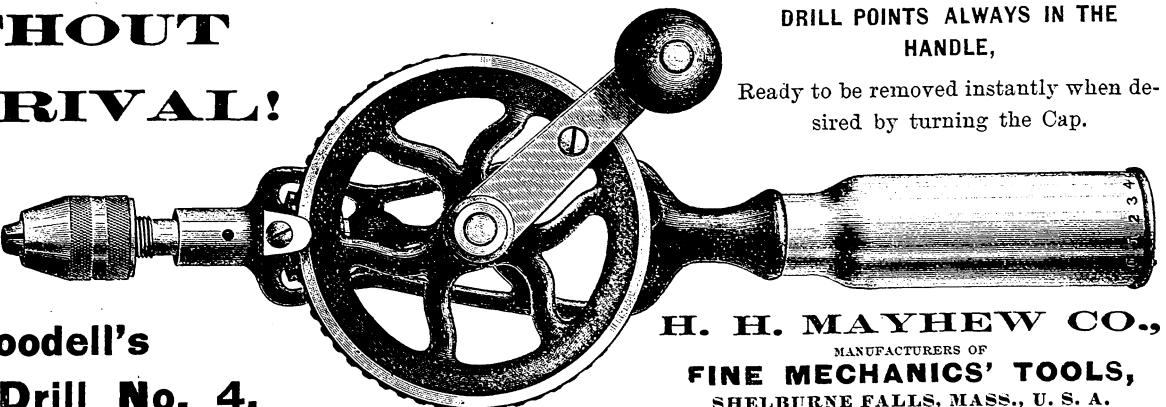
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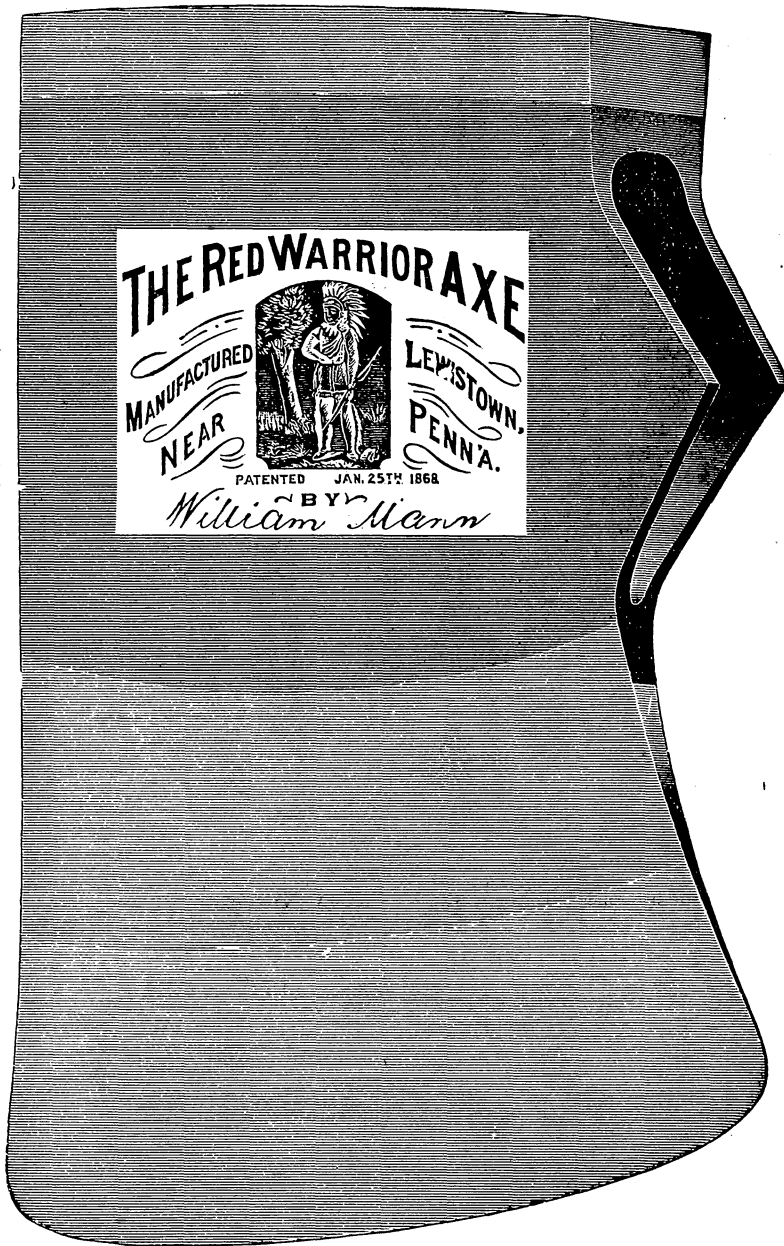
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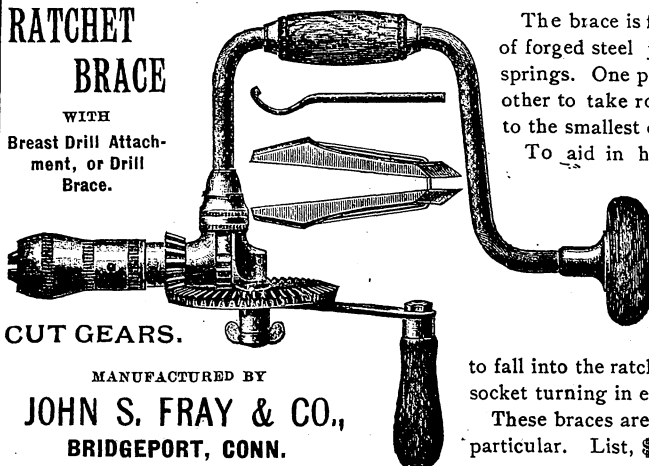
Among the subjects discussed are: The selection
of a business; choice of a locality; buying a
stock of goods; examining, marking and ar-
ranging goods; how to advertise; employ-
ment of clerks; selling for cash and credit;
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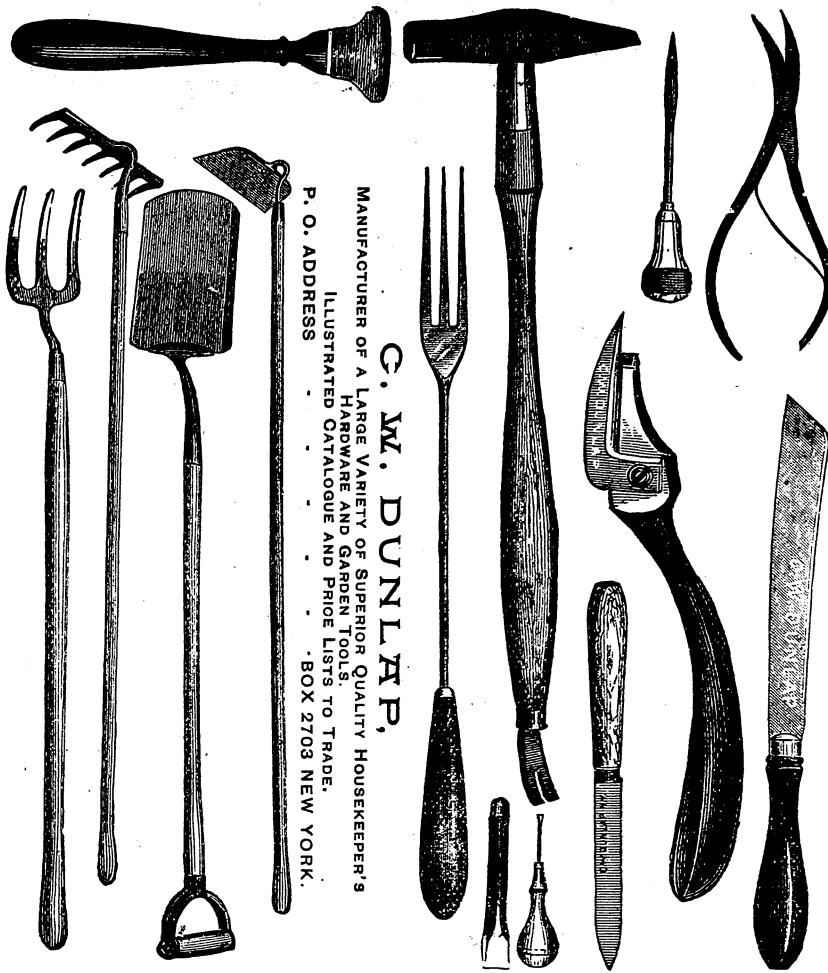
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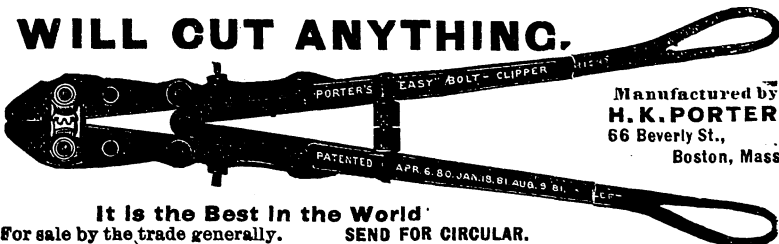


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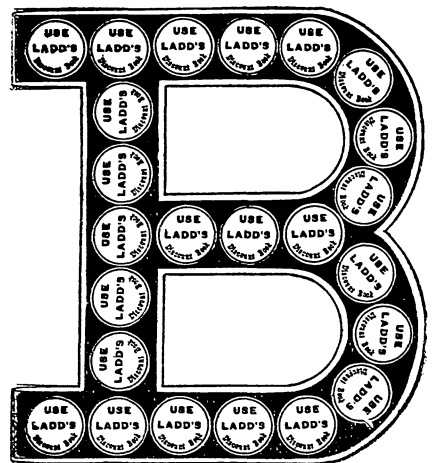
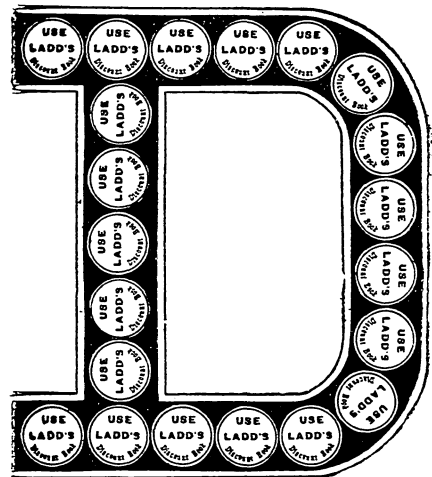
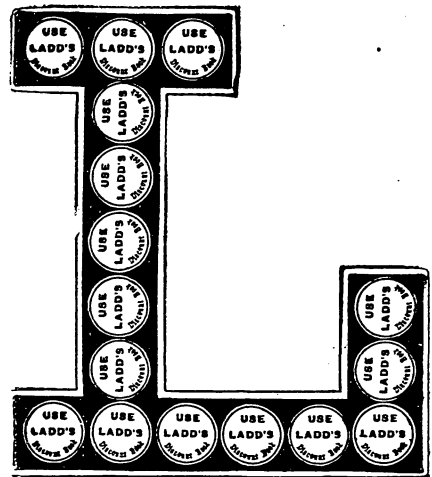
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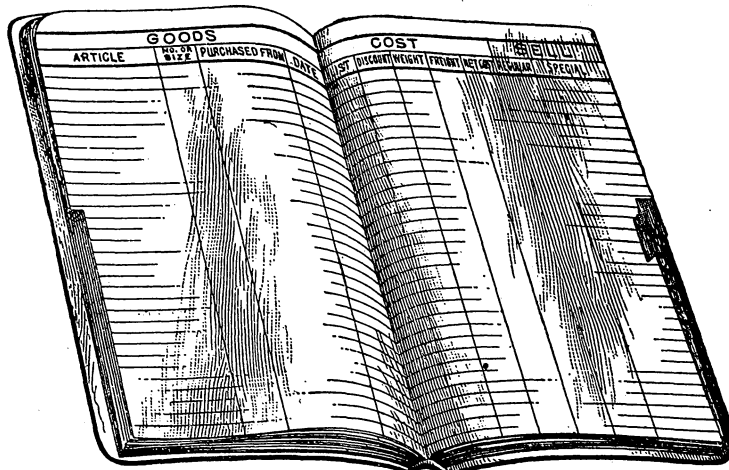
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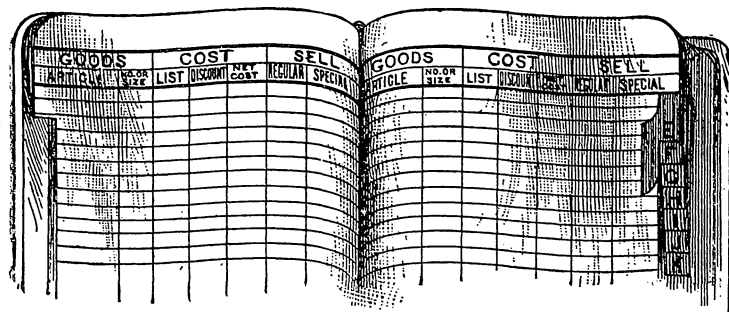
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In this book each page is complete, and the record of prices does not, as in Book A, run across two pages. Thus it accommodates a larger range of goods with much less detail in the record. It is adapted for office or store use, and by the use of familiar abbreviations, sufficiently large for the convenient and concise record of prices.

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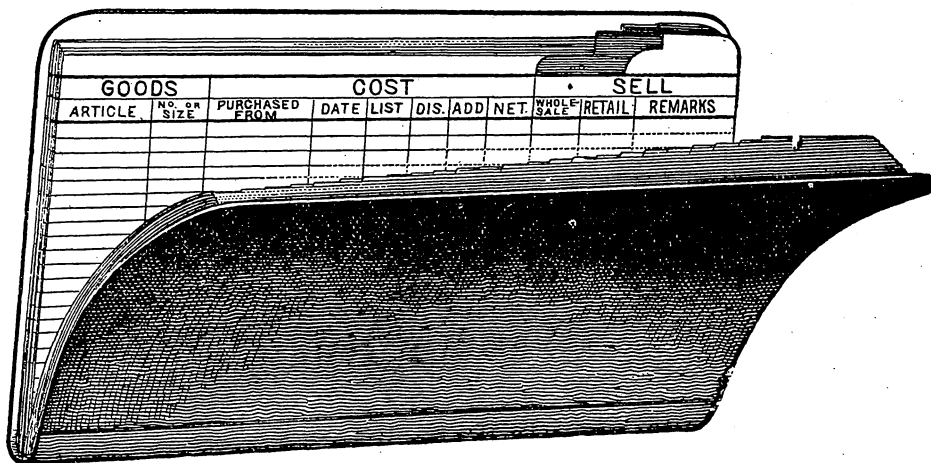
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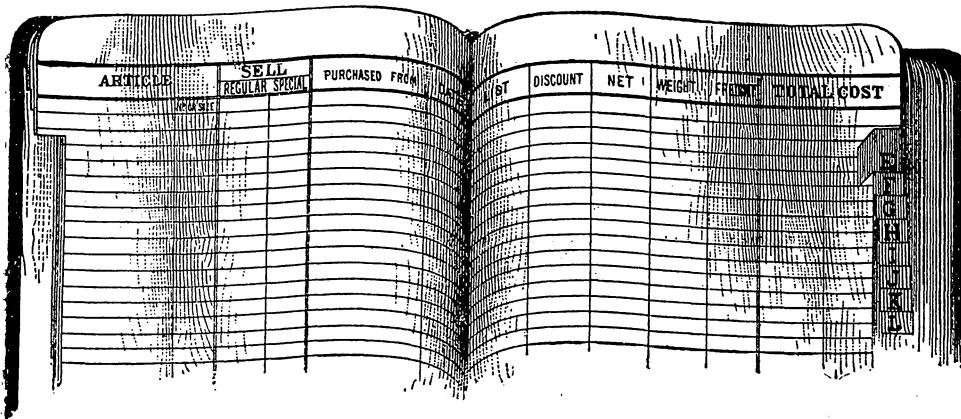
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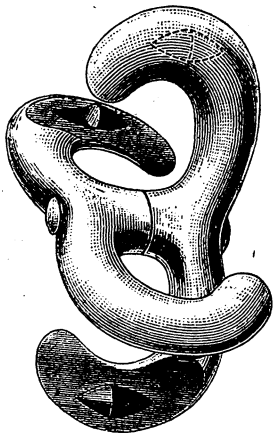
The name of the article, its number or size and the selling price are the first to meet the eye on the left-hand page, as embodying information desired when the selling price is required. The other headings follow in convenient order, by which a detailed memorandum regarding the goods may be kept, the whole being seen at a glance. A number of pages at the back of the book are arranged for memoranda, which will be found a great convenience. This arrangement is adapted to the requirements of the trade in this direction.

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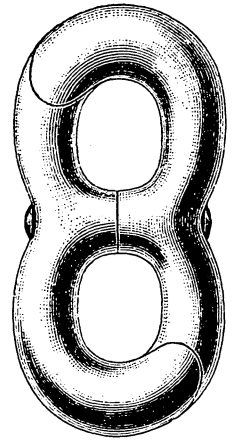
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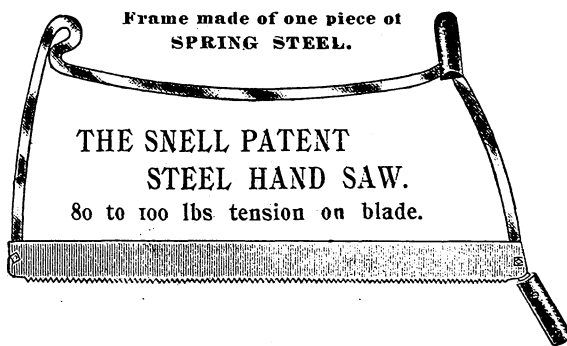
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THE SNELL PATENT
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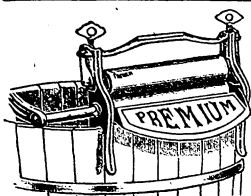
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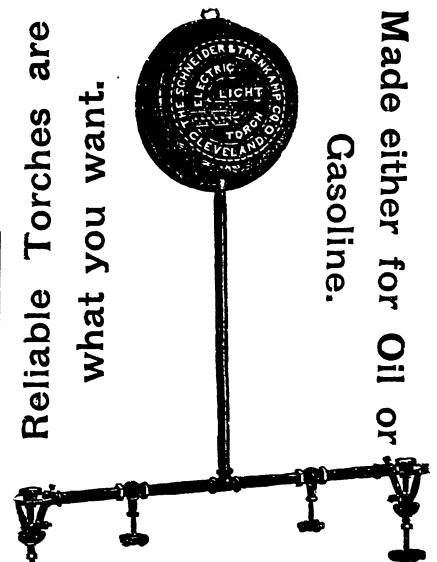
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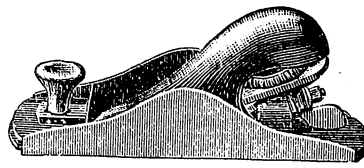
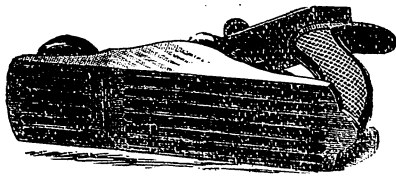
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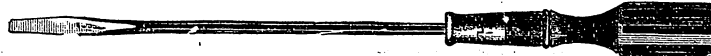
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Iron Planes,
Corrugated
Bottoms,
Checkered
Rubber Handles.



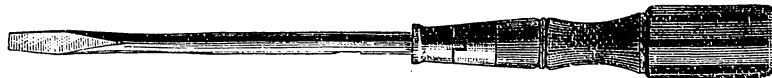
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Planes, Solid
and Adjustable
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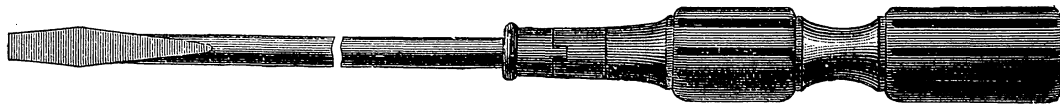
The Fluted
Handle Gives
the Best
Possible Grip.



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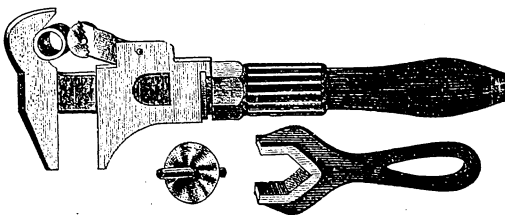


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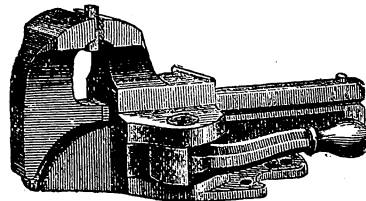


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AND WITH
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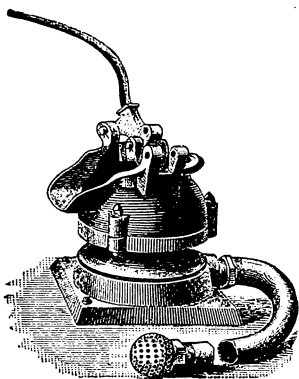
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POINTS,
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OILERS
WRENCHES, &c

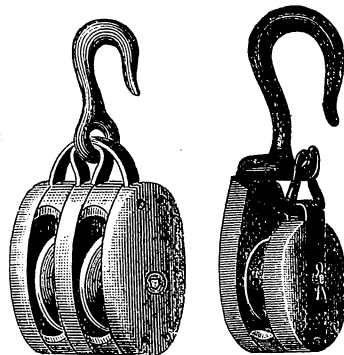
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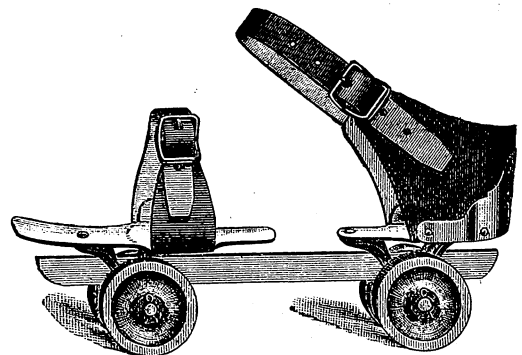
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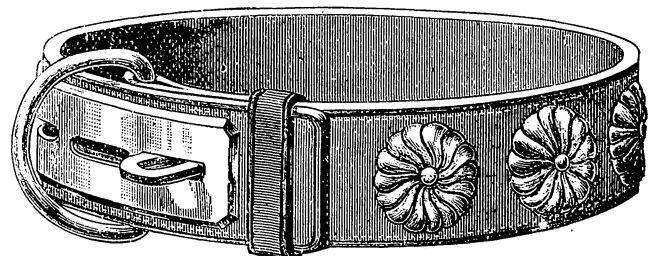
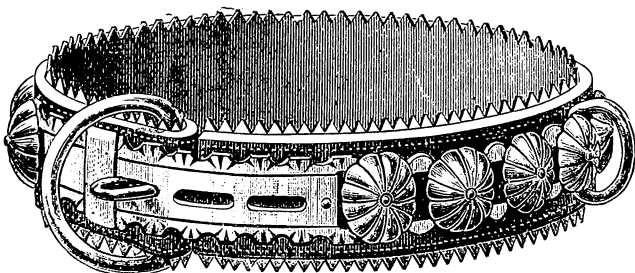
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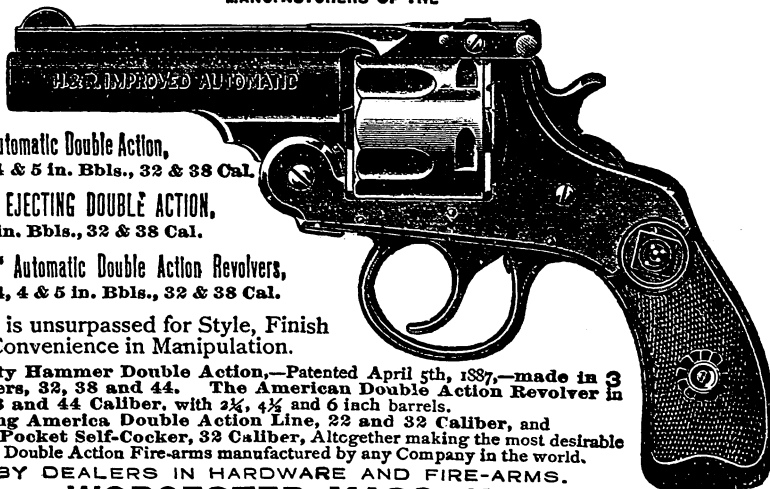
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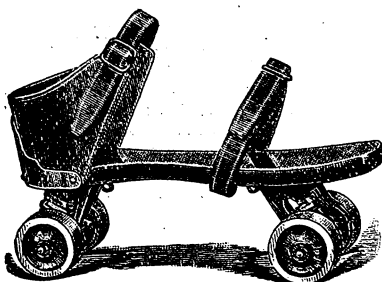
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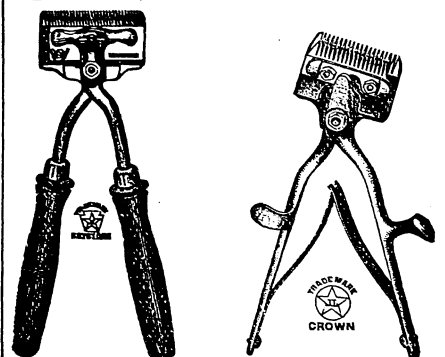


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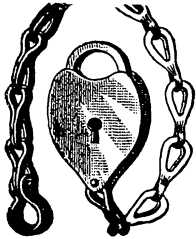


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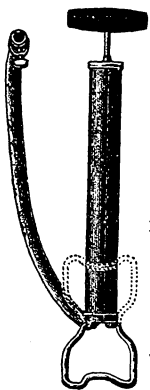


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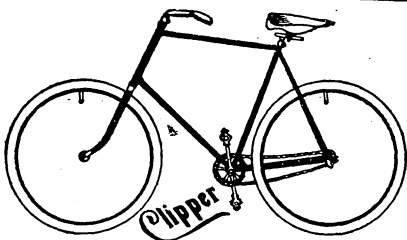
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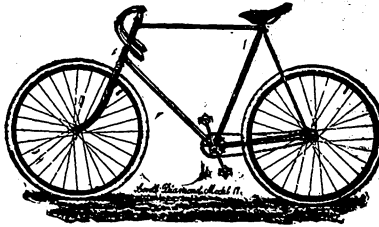
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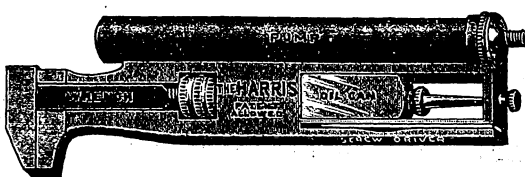
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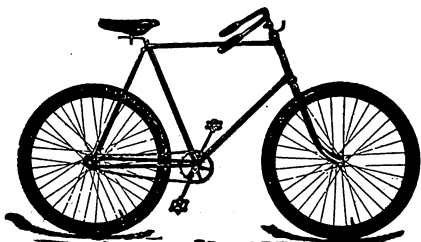
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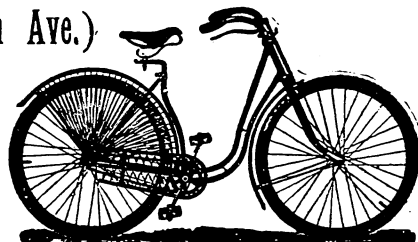
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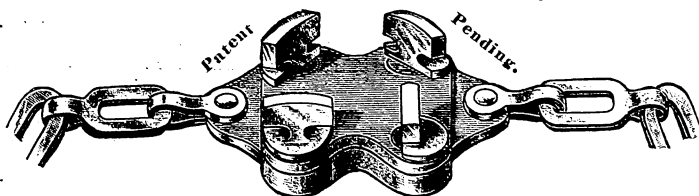
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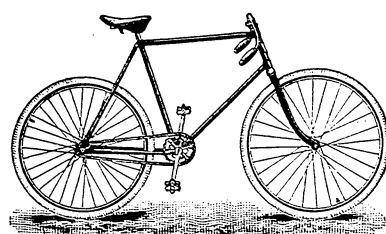
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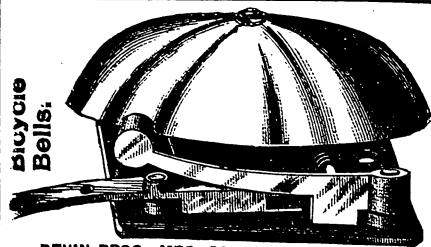


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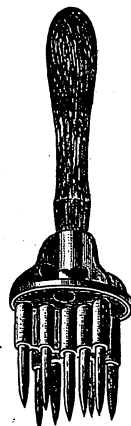
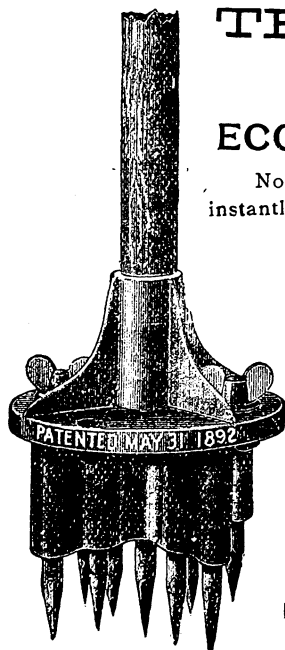
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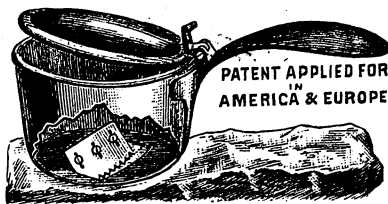
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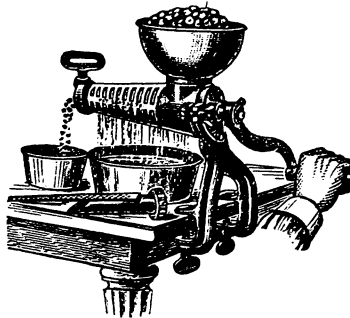
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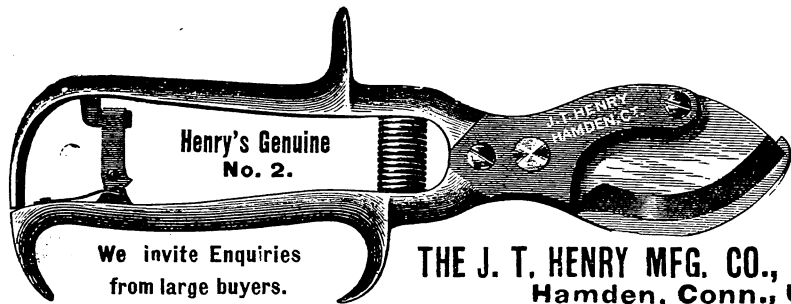
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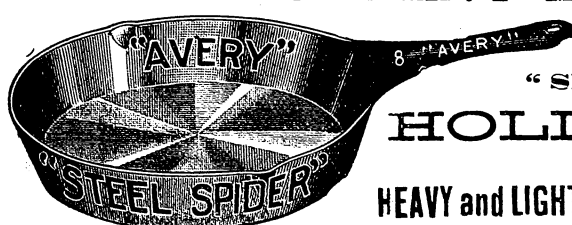
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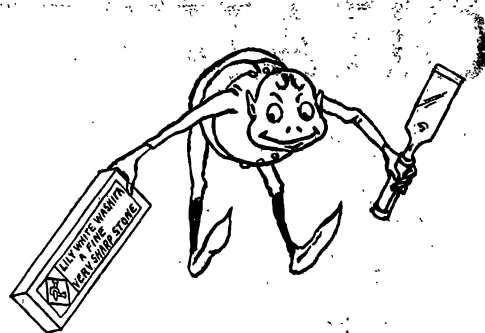
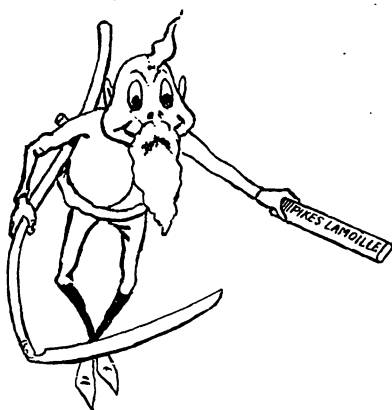
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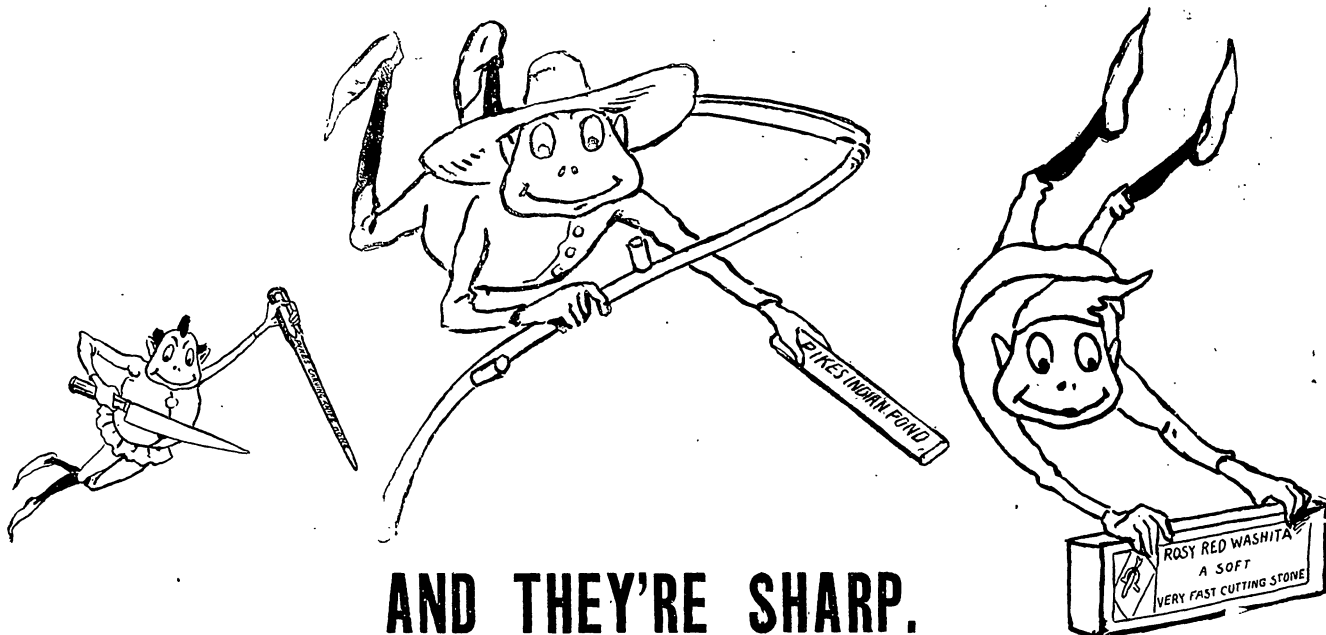
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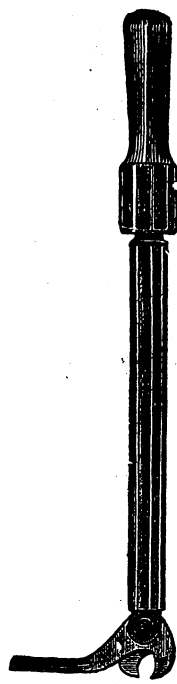
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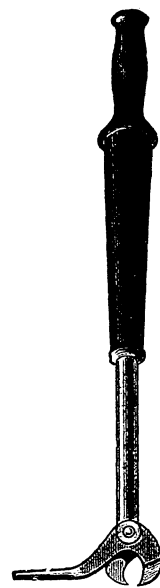
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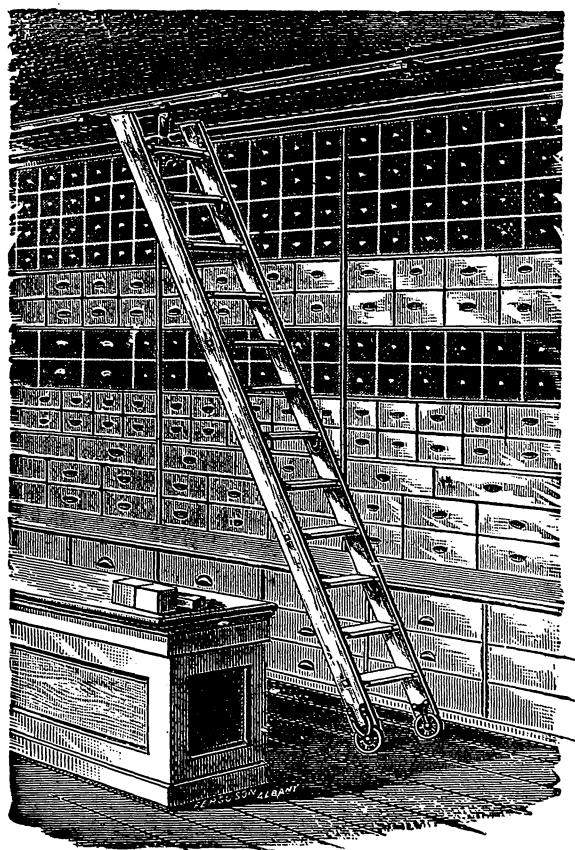
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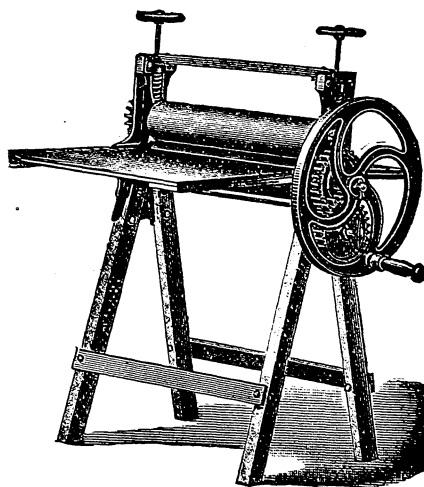
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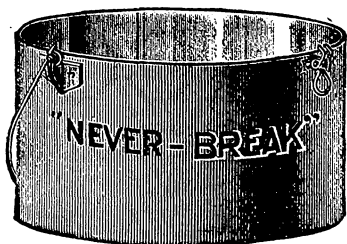
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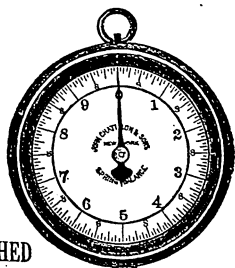
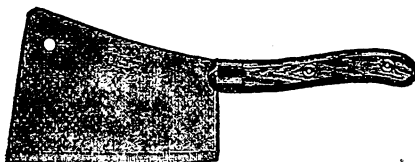
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Traps, Mallets, Bung Starters, Hand Screws.
Ripley Mfg. Co., Unionville Conn.

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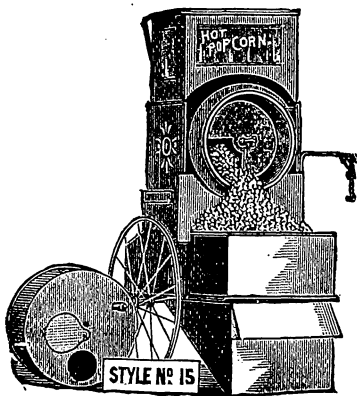
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Bearing the "SUN" TRADE-MARK
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OUR NEW LINE AND NEW DESIGNS WITH GENUINE STEEL ALLOY GRINDERS

Are a High Grade Coffee Mill at Popular Prices. We guarantee them Rapid Grinders, and to stand constant use for years. They are mills the seller can warrant with full confidence.

Do not be confused with the imitation of our goods from a
PATCHED UP, SECOND-HAND JOB LOT STOCK.

We cannot afford to sacrifice the confidence of the trade and our own reputation that way. We are manufacturers of all the goods we sell and stake our reputation on their merits.

THE SUN MANUFACTURING CO.,
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MANUFACTURERS OF
Cash Registers, Money Drawers, Coffee Mills and Wooden Ware Specialties.

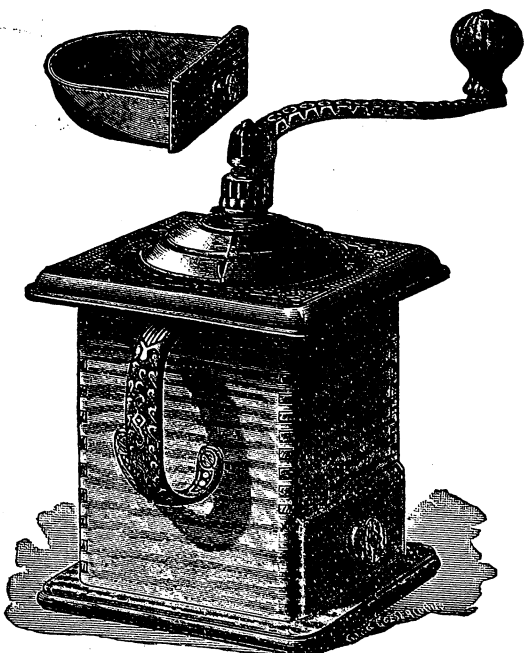


For Sifting Flour, Straining and Measuring Fruits,
Liquids and many other purposes. Is unquestionably the
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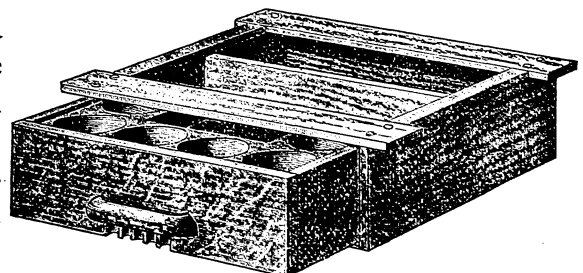
No. A9 Ideal Coffee Mill.
Holds one pound of roasted coffee.

DON'T SEND US YOUR ORDERS

FOR IDEAL AND QUICK GRINDER MILLS OR ALARM
TILLS SO THEY WILL REACH US

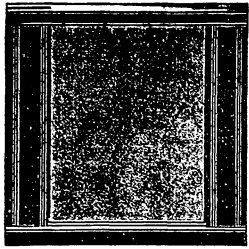
Saturday afternoon. Saturday morning or Saturday night
is all right. We always fish with a cork. Our cheapest
mills are those with "steel alloy" grinders. Some
people fish with worms. We make nineteen patterns of
coffee mills, six being the "pound variety."

We Sell a
Mill a minute
with a tin
Drawer in it.
Our competi-
tors must not
know this.

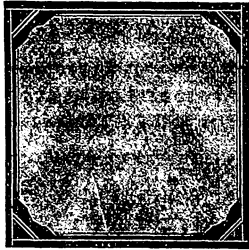


Waddel Wooden Ware Works,
GREENFIELD, OHIO.

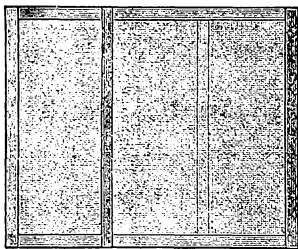
SAME OLD STORY!



Bonanza and Perfection.



Window Screen Frame.



Extension Screen.

Wire Cloth is already short.

The larger makers do not want any more large orders for screen doors.

Window Screens and Frames will soon be "in the same boat."

However, our capacity for Windows and Frames is still good, as we are in better shape to make large quantities of these than of doors, although our door capacity is increased 50 % this year and we are coming on nicely.

Five thousand screens a day is a large quantity. We carry in stock 100,000 screens and worked materials for 75,000 more. If we have an order for screens not in stock we can finish it up in a day or two from this big stock of worked material. We expect to be able to take care of our trade comfortably.

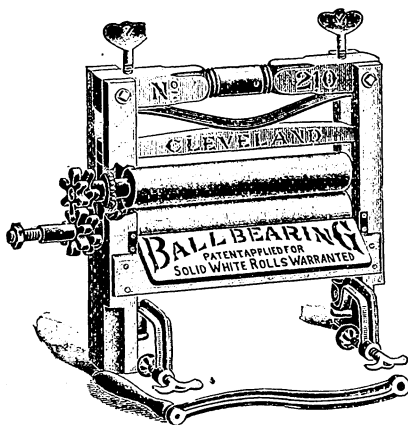
The Bonanza and Perfection Screens have side wings (with hand-holes) with 6-inch adjustment. We make them in a great variety of finishes and sizes.

The Window Screen Frame enables the inexperienced to make, with little trouble, solid screens to fit. Hardware dealers put up a great deal of such work. It brings better prices than adjustable screens.

The Extension Pattern Window Screen is of the two-frame variety. Its advantage is in its great range of adjustment and in the extra amount of air. These in Basswood are cheap and good and the freight is light.

All the above goods are the best of their kind, guaranteed to be well made from good materials. *Send for Complete Catalogue*

A. J. PHILLIPS & CO., - - FENTON, MICH.



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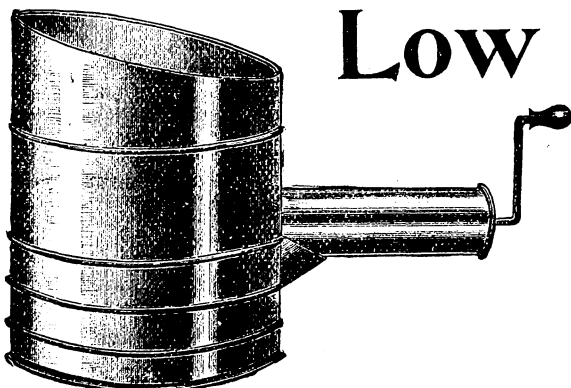
This Wringer has **BALL BEARINGS** same as a bicycle. Runs so easy it's play to use it. No other like it. Best made. Sells for more than the common kind. Women using it won't have any other, tell their neighbors, sales increase, everybody satisfied. Pays you to push it.

SEND FOR SAMPLE.

THE PEERLESS MANUFACTURING CO.,
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We also make High Grade Bicycles.

OSGOOD & HOWELL, Pacific Coast Agents, - - 132 Market St., San Francisco, Cal.



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WRITE TO KNOW THE
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OUR FOUR STYLES OF SIFTERS
ARE GUARANTEED TO BE ALL

High Quality.

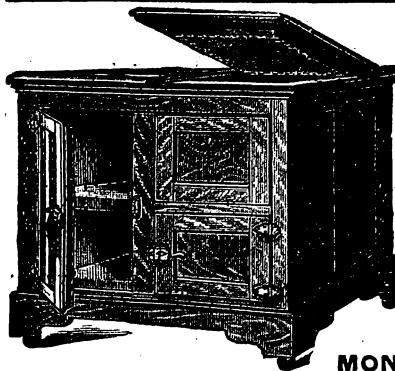
Dealers everywhere are entitled to New Catalogue
and New Prices.

Bromwell Brush & Wire Goods Co.,
Established Seventy-six years. **Cincinnati, O.**

To YOUR Interest !

A FAC-SIMILE OF THE ADVERTISEMENT WITHIN THE MARGINAL LINES BELOW WILL APPEAR DURING THE RETAIL SEASON IN MOST OF THE LEADING MAGAZINES AND HOUSEHOLD PUBLICATIONS.

WOULD IT NOT BE TO YOUR INTEREST AS A DEALER TO PREPARE



The superiority of Stoneware Lining in Refrigerators becomes obvious at a glance. It neither sweats nor absorbs moisture and never becomes sour or musty. It is made without open seams; is practically indestructible and is very easily cleaned.

Stoneware Lined Refrigerators

are built upon the best known principles of refrigeration. A perfect circulation of dry, cold air prevents the accumulation of gases and vapor or the mixture of flavors, while the consumption of ice is greatly reduced. The first cost is greater than for ordinary refrigerators but they are far cheaper in the end. If your dealer don't keep them, write for Catalogue. We pay the freight.

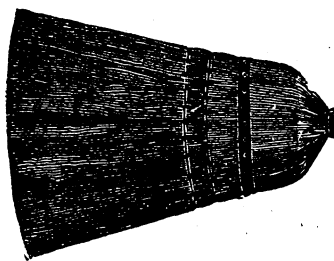
MONROE REFRIGERATOR CO.,

LOCKLAND, OHIO.

IN GOOD TIME FOR THE DEMAND THAT WILL THEREBY BE CREATED ?

AS A RULE

WE SELL BUT ONE DEALER IN A TOWN, AND WILL NOT SELL TO CONSUMERS IN PLACES WHERE OUR GOODS ARE SOLD BY DEALERS, BUT WILL REFER INQUIRIES TO THE DEALERS. WRITE FOR CATALOGUE AND TRADE DISCOUNTS.



No. 6, CORN BROOM.

JOSEPH LAY & CO.,

RIDGEVILLE, IND.,

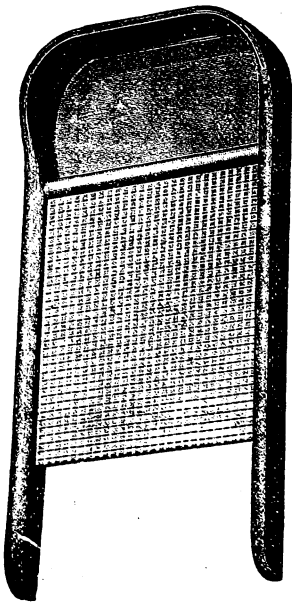
MANUFACTURERS OF

BROOMS AND BRUSHES OF ALL KINDS.

Those of the Heavier Work a Specialty.

FOR RAILROAD, SHOP, WAREHOUSE, STREET, STABLE, BLOOM, CHILL, CASTING and MOULDERS' BRUSHES, &c., &c.

The Utility Washboard



Is a Zinc Board made from best quality No. 6 Zinc, the heaviest and strongest Zinc in use for Washboards.

CRIMP—The Crimp is our Improved Deep Globe, acknowledged far superior to any now in use on other boards.

OFFERS—absolute protection from water at sides as well as the top of the soap board.

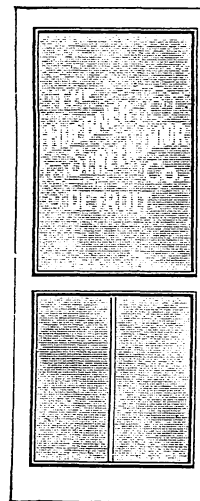
WHY?—Because being made of one piece which is bent thin and broad at the sides and top of soap board where all splashing occurs, it is impossible in washing to splash over it.

CONSTRUCTION—The Board in point of construction excels anything of its kind ever produced. Its lines present a symmetry and regularity pleasing to the eye, and in point of strength is unquestionably superior to any.

SALES—Where these are offered for sale competing boards are not "in it."

MANUFACTURED BY

Olds Wagon Works,
Fort Wayne, Ind., U. S. A.



THEY are made of Michigan Pine Lumber. The Stiles are mortised and are four inches wide. They are hand painted with a walnut-colored varnish, and covered with the best Wire Cloth. The finish, material and workmanship is first-class in every respect. Crated 1/2 doz. in a package.

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Co.,
DETROIT.

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Member of the New York Bar,

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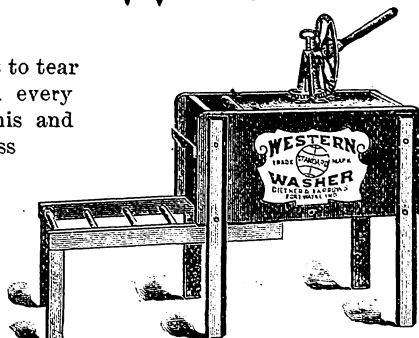
A simple, clear and accurate presentation of the general laws, and of the laws of the several States relating to the rights of property, contracts, debts, partnerships, bankruptcy, insurance, corporations, marriage, divorce, &c., &c., with which are included correct copies of all legal instruments and forms, such as notes, deeds, mortgages, leases, wills, &c., and a dictionary of legal words and phrases.

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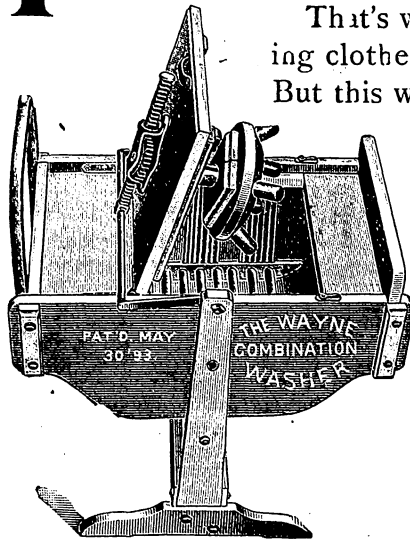
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No Dealer Should be Without it.

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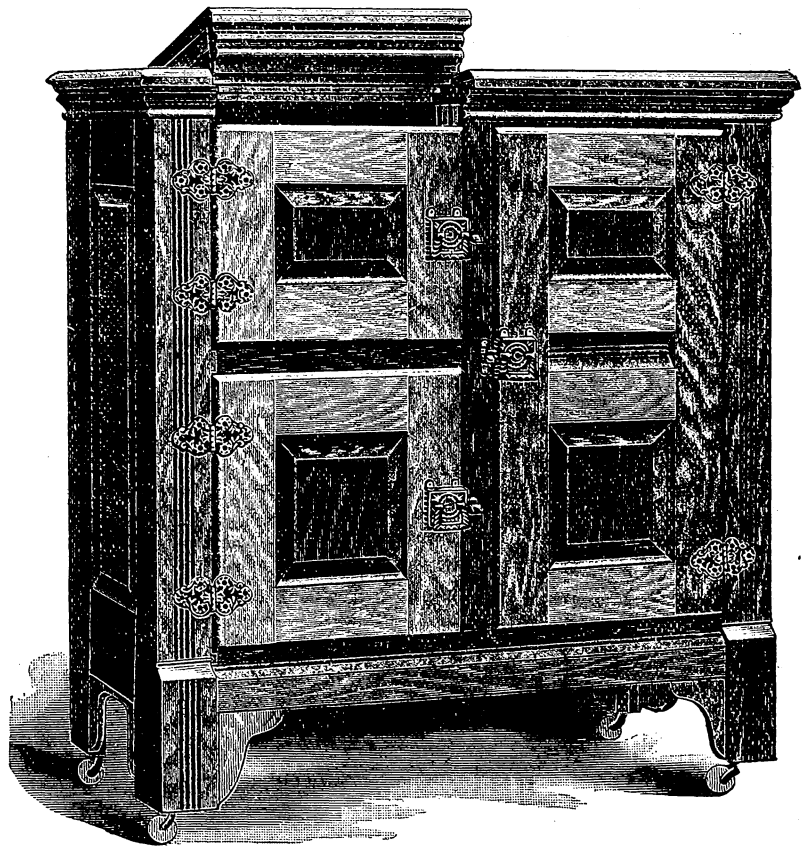
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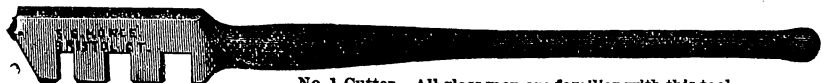
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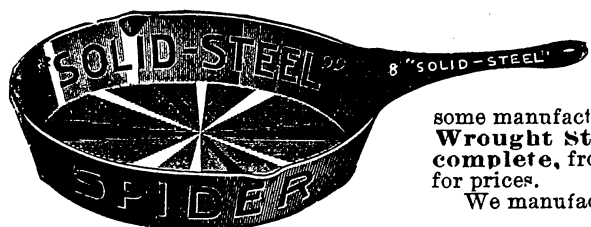
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No Seams, no Rivets in "Solid-Steel" Ware.

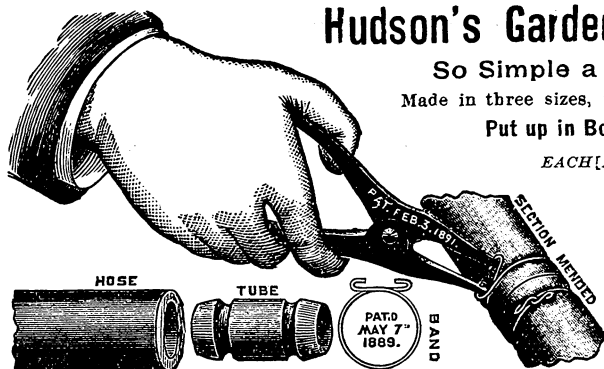
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"Solid-Steel" Maslin Kettle.

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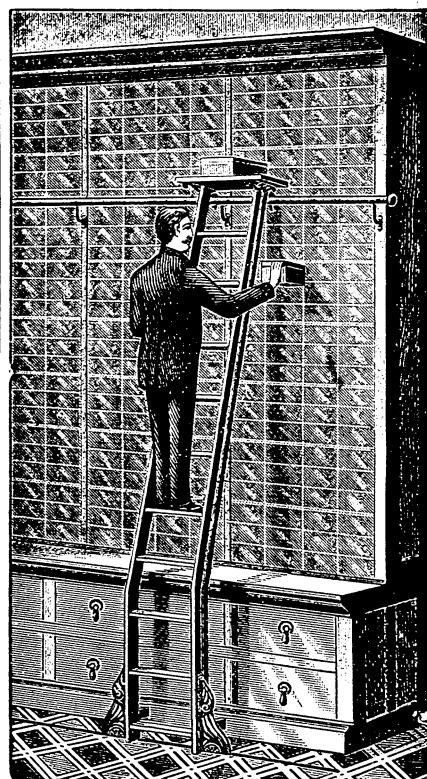
MADE IN ALL THE SIZES.

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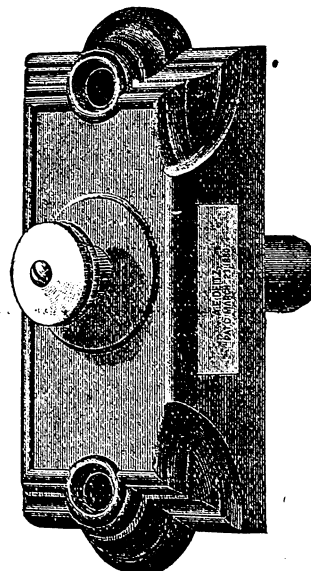
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In all Finishes
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LOCKS FOR ASYLUMS
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WROUGHT STEEL DOOR LOCKS.

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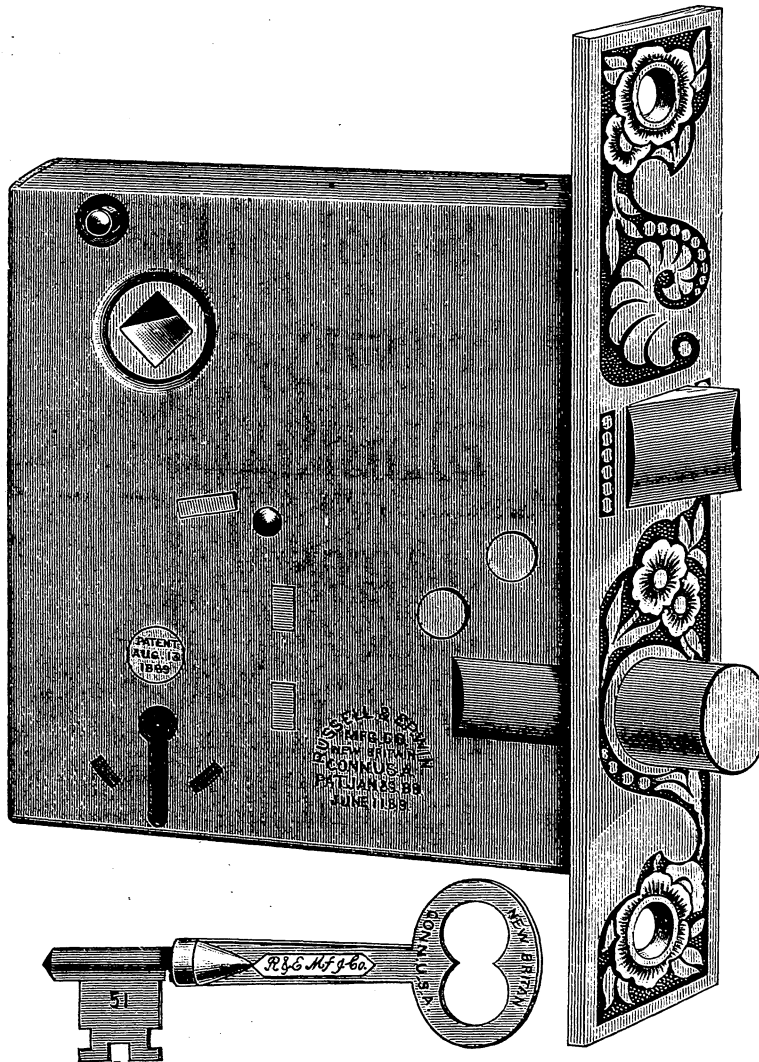
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They

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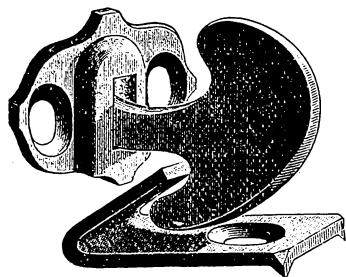
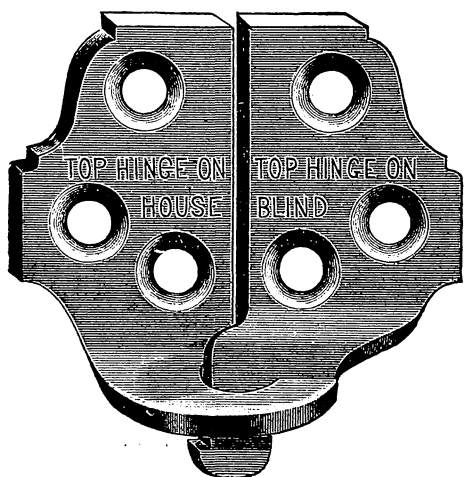
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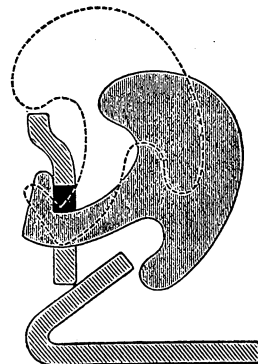
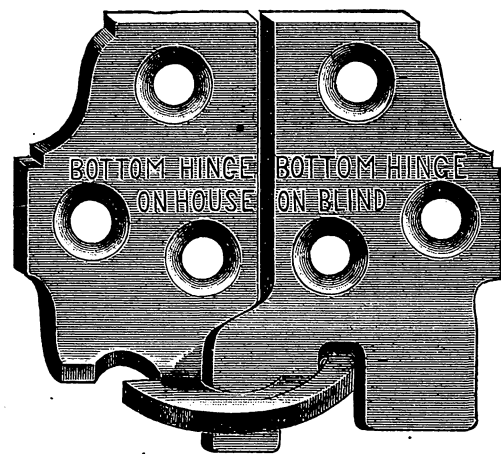


**Wrought
Steel
Gravity
Blind
Hinges**

FOR

Wood.

PATENTED.



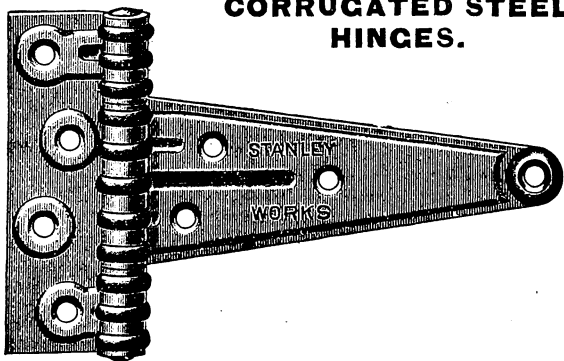
These Hinges lock the blind by the action of gravity, and, being made from heavy gauges of wrought steel, will not break.

Their improved construction enables the blind to be securely locked when open and the hinge to be unlocked without lifting the blind.

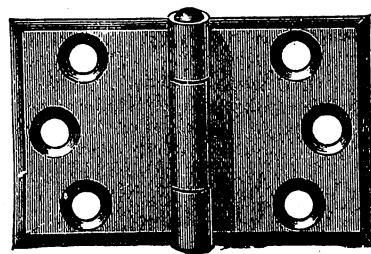
The improved sill catch prevents the closed blind from being opened from the outside.

These Hinges are applied in substantially the same manner as those ordinarily in use and require the same number and sizes of screws.

Each dozen set is packed in a neat paper box. Ten dozen sets in a case.



**CORRUGATED STEEL
HINGES.**



**WROUGHT STEEL
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ANYTHING MADE FROM WROUGHT STEEL.

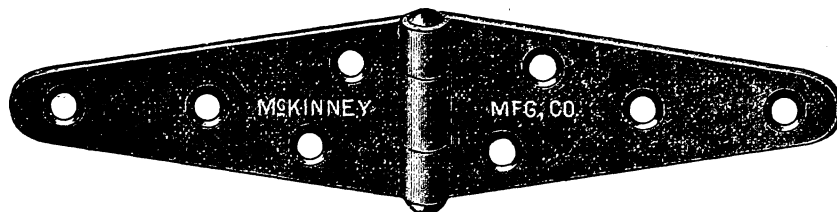
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STEEL HINGES AND BUTTS.

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"NONE BETTER."

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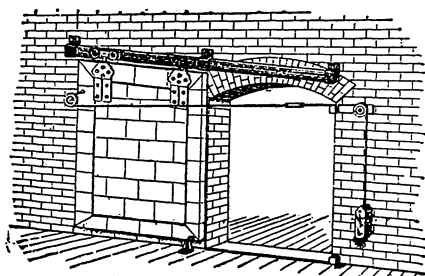
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Parlor, Barn and Fire Door
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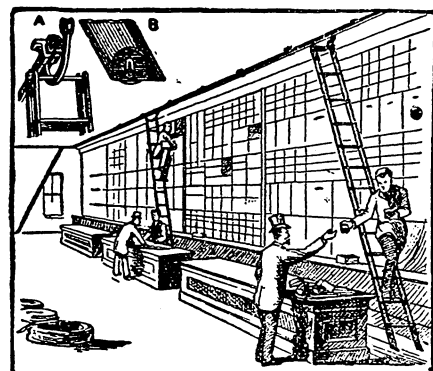
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Fire Door Hangers. Best in the World. Equipped
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THE BOMMER PATENT

COMPOUND SPIRAL SPRING HINGES

ARE MADE OF

Wrought Steel,
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ALSO OF CAST METAL.

UTILITY, DURABILITY and BEAUTY
COMBINED.

It will pay you to sell them because they
will please your customer and a pleased
customer will pay you.

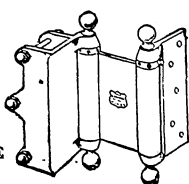
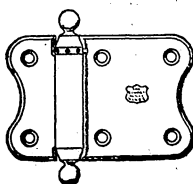
OUR CIRCULAR TELLS THE REST.

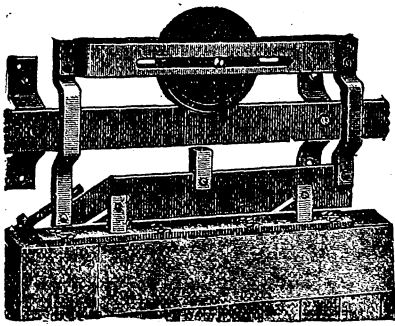
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This is the BOMMER BOX Spring HINGE
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This Hanger is made of Steel.
The Wheel is also Steel, except the filling or tread.
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The Hanger is Anti-Friction.
More nearly Noiseless than any other.
Ease of adjustment.

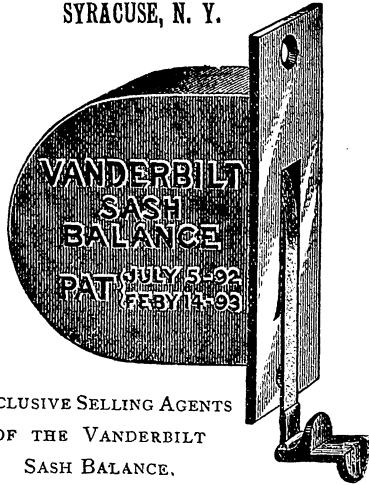
Can be erected with half the labor others require.
Track will not swell, shrink or warp out of true.
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Simplicity in all its parts.
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ALSO LANE BARN DOOR HANGER AND TRACK. SEND FOR CIRCULARS.

Manufactured by

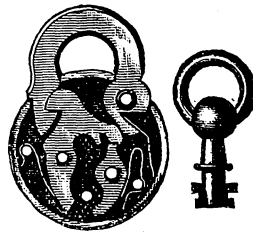
LANE BROS., Poughkeepsie, N. Y.
JOHN H. GRAHAM & CO., General Agents, 113 Chambers St., New York.

E. C. STEARNS & CO.,
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EXCLUSIVE SELLING AGENTS
OF THE VANDERBILT
SASH BALANCE.

PATENT PERFECTION PADLOCK.



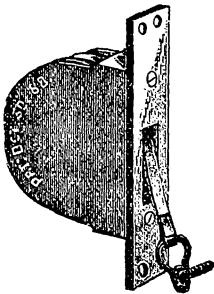
Eight Tumblers, Key Turning Both Ways.

Sizes, $\frac{3}{4}$ inch to $2\frac{1}{2}$ inches, of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also, $\frac{1}{2}$ and $\frac{3}{4}$ inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world.

Adopted by the United States Treasury for bonded warehouses.

AMES SWORD CO., Chicopee, Mass.

Send for Price-Lists and Circulars.



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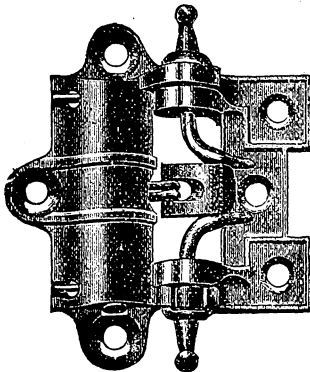
To buy an inferior article, which your trade condemns, when you can get

THE CALDWELL SASH BALANCE.

The best material, right principle and care in making and testing have made it the **LEADER** for five years. Write to

CALDWELL MFG. CO., Rochester, N. Y.

NEW IDEA SPRING HINGE



Holds the door strongest when closed.

Resistance gradually decreases in opening

and increases in closing the door.

A covered (patented) hold-back Spring Hinge. Full particulars, free Sample and Prices by mentioning this paper.

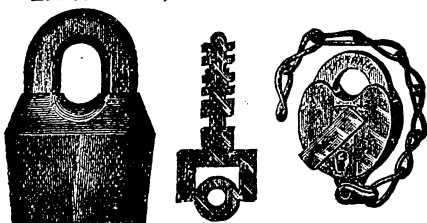
STOVER MANUFACTURING CO.,

145 River St., Freeport, Ill.

ESTABLISHED 1879.

KEYSTONE LOCK WORKS,

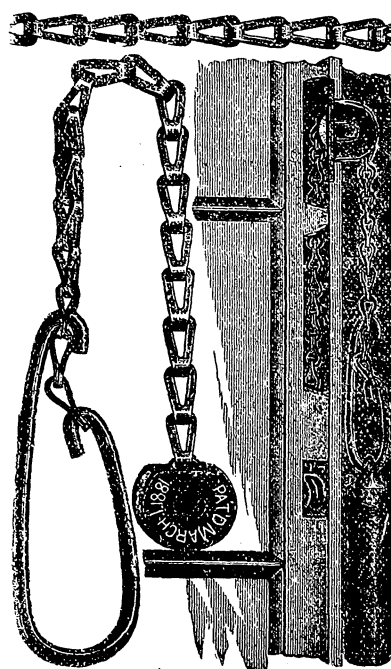
E. T. FRAM, Lancaster, Pa., U. S. A.



Originators, designers, patentees and manufacturers of all the leading popular styles of **PADLOCKS**, Key-Locking Scandinavian with our patent Inter-Locking Tumblers; the only reliable lock of this style ever made. **SELF-LOCKING** Scandinavian of the highest type of perfection. Dust Proof Railroad, Freight Car and Switch Padlocks. Brass, Bronze, Steel and Malleable Iron Padlocks for all purposes and in all finishes. 131 different kinds. Write for our new 100-page catalogue.

SURPLESS, DUNN & ALDER, General Agents,
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THE SMITH & EGGE MFG. CO., BRIDGEPORT, CONN.



THE GIANT PADLOCK.

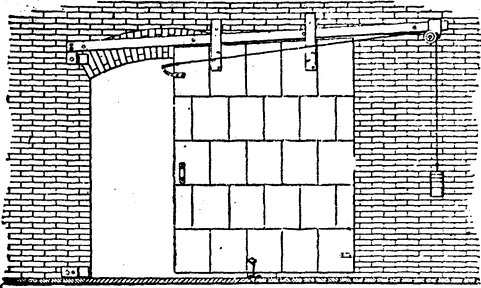
Centennial Award. "Superior in Every Respect."

This is one of the best selling locks in the market, and affords the dealer a large profit. It is thoroughly and strongly made—of the best material—very handsome in appearance, and every Lock is warranted. Orders solicited.

THE GIANT METAL SASH CHAIN

is a substitute for cord in hanging weights to windows. It is manufactured by us only, and by automatic machinery, patented and owned exclusively by ourselves, and whereby we secure uniformity of construction and quality. We have been to great expense in producing a metal having all the qualities and conditions requisite for making suitable chain for this purpose, and to prevent other chain of the same pattern of link and of the same general appearance, but made from an inferior metal, being offered as the same thing, we patented the word "Giant" as a Trade-Mark, as applied to either metal or chain. Trade-Mark Registered April 16, 1878, and October 22, 1878, and our metal is therefore known in the market as "Giant Metal," and our chain as "Giant Metal Sash Chain."

Improved Balanced Fire Door.

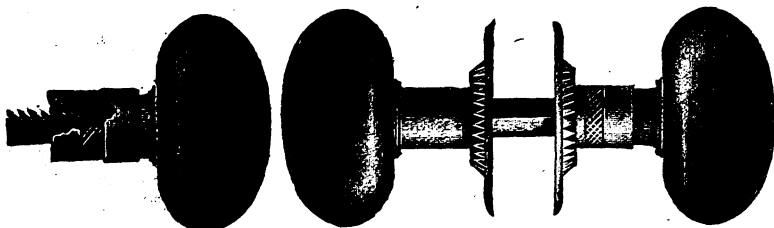


These Fire Door Trimmings have the following advantages over all other devices for a similar purpose:
FIRST: The link is constantly in the opening, whatever position the door may be in, if open at all.
SECOND: One binder, back stop and rope pulley are attached to the track, thus saving two wall bolts, and the expense of drilling for same.
THIRD: The weight is better placed, being in rear of door, and thereby entirely out of the doorway.
 The saving in labor of attaching and in cost of bolts is at once apparent to the mechanic, while the device is stronger and the protection from fire thereby greatly improved.

Write for Catalogue.

Victor Manufacturing Co., Newburyport, Mass.

Sectional cut showing construction of Knob.



Half size cut of knob as applied to door. No side screws or adjusting washers.

Don't you want your stock to represent the latest and most improved up to date Hardware? The Whipple Patent Door Knob is the latest and best Door Knob attachment ever made. Give it a trial.
PERRY & WHIPPLE CO., New Haven, Conn.
 New York Sales Agent, E. G. SHEPARD, 142 Chambers Street.

SASH WEIGHTS!

NORTON BROTHERS,

Manufacturers,

Office: 813 Masonic Temple, CHICAGO.

WORKS AT MAYWOOD, ILL.

RICHARD ECCLES,

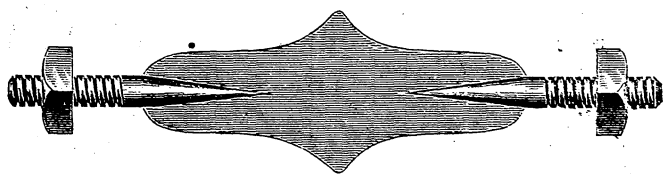
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—MANUFACTURER OF—

CARRIAGE FORGINGS,

Couplings, Clips, King Bolts, Fifth Wheels, &c.

SEND FOR SUPPLEMENT TO CATALOGUE,



Showing a full line of Axle Clips, Spring Bar Clips and Three Piece Saddle Clips.

SEND FOR CATALOGUE AND SUPPLEMENT.

WHY USE WOODEN OR HEAVY STEEL BLOCKS

WHEN THE STEEL AND IRON

TACKLE BLOCKS

—MADE BY—

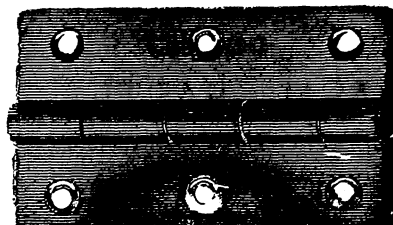
The Cleveland Block Co.,

CLEVELAND, OHIO, U. S. A.,

ARE BETTER IN EVERY WAY.

No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable.

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Cast Brass Butt Hinges

IN STOCK AND FOR SALE BY

W. & J. TIEBOUT,

Nos. 16 & 18 Chambers Street, New York,

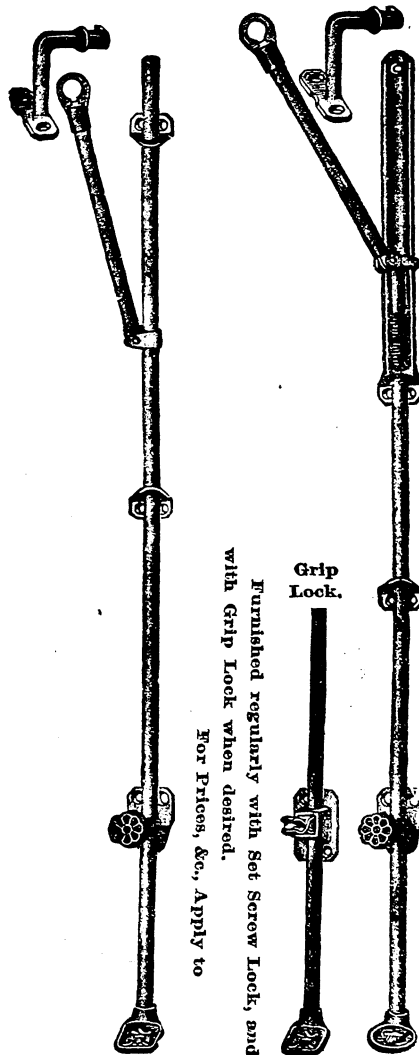
MANUFACTURERS OF

BRASS, GALVANIZED & SHIP CHANDLERY
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TRANSOMLIFTERS

"EAGLE."

"SHIELD."



Furnished regularly with Set Screw Lock, and with Grip Lock when desired.
 For Prices, &c., Apply to

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BIRMINGHAM, CONN.,

MANUFACTURERS OF

A Full Line of Carriage Hardware

ALSO SPECIAL FORGINGS.

Estimates cheerfully given. Send for Catalogue

SASH WEIGHTS

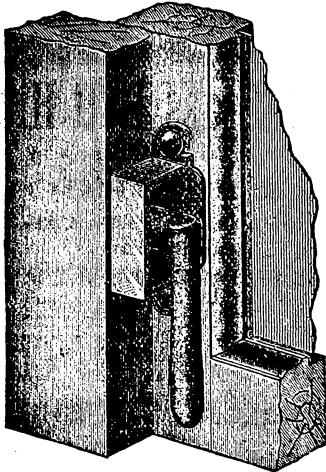
E. E. BROWN & CO.,

McKean and Meadow Sts.,

PHILADELPHIA, PA.

DOLBER'S SASH FASTENER.

Patented Aug. 1, 1893.



THE BEST DEVICE EVER INVENTED FOR FASTENING STATIONARY

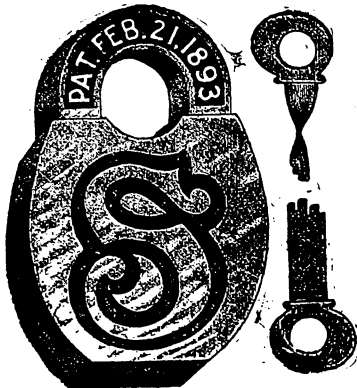
Screens, Shutters or Windows.

The above shows Fastener as applied to the side of an outside window, fastening same to the outside casing.

Saves Time, Labor and Expense.

F. V. WOOSTER, 66 Beverly St., Boston.

THE SCHULTZE LOCK UNPICKABLE.



SEND FOR CIRCULAR.

MANUFACTURED ONLY BY

The Schultze Mfg. Co.
Cor. Emerald & Wishart Sts., Phila., Pa.



THE STAR
COIL SPRING SHAFT SUPPORT
AND ANTI-RATTLER.

Fast selling; always gives satisfaction. No weight on horse. Worth twice the cost for convenience in hitching up. Agents wanted. Send stamp for circular. Price, \$1.00. State rights for sale.

THE DECATUR SHAFT SUPPORT CO.
Decatur, Ill.

GET THE BEST! SELLS AT SIGHT!

THE ARC SPRING CURRY COMB

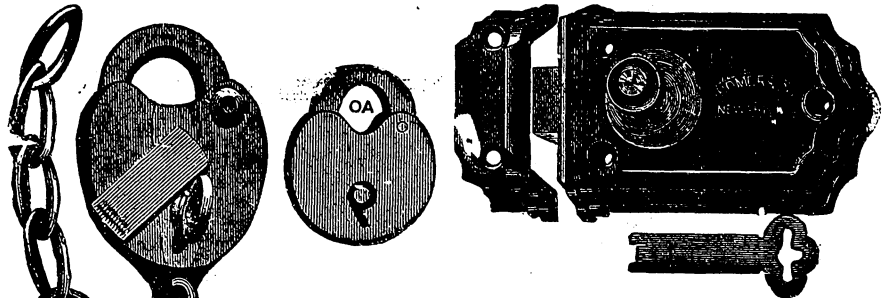
Is twenty per cent. larger than any other Spring Comb on the market, and is absolutely the finest Curry Comb ever offered to the trade. It is made of Fine Spring Steel or Fine Spring Brass, and is a Two Faced Reversible Comb, which will wear longer than two of any Curry Comb on the market.

For Sale by all First-Class Jobbers in the U. S.

DECKER MFG. CO.,
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ROMER & COMPANY, Manufacturers of PATENT JAIL LOCKS, BRASS and IRON PADLOCKS,



Adjustable Door Knobs and Trimmings,
Front Door Handles.

Patent Horizontal Rim Cylinder Reversible Night Latches.

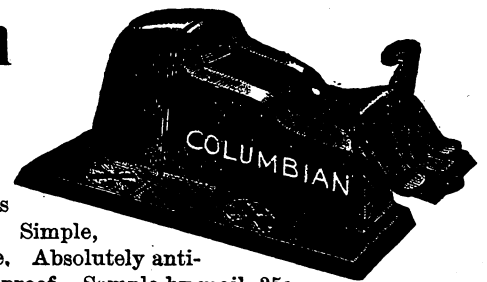
Illustrated Lists sent to the Trade on application.

275, 277 and 279 Passaic St., near Erie and D. L. & W. R. R. Depots, Newark, N. J.

Columbian

Sash

Locks three ways
with one motion. Simple,
strong and durable. Absolutely anti-
rattle and burglar proof. Sample by mail, 35c.



Lock.

COLUMBIAN SASH & DOOR LOCK CO.,
WAUSEON OHIO.



No. 3

Globe Street Lamp.

Light your Streets and Driveways.

The S. G. & L. CO.

Tubular Globe Street Lamp

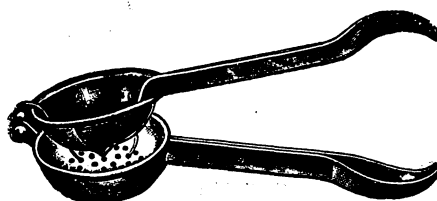
IS THE Best Street Lamp Manufactured.
Equal to the best Gas Light.
Will not Blow Out in the Strongest Wind.
Will not Smoke.
Will not Freeze.
Automatic Extinguisher.
Outside Wick Regulator.
Will Burn Four Hours for One Cent.

MANUFACTURED BY

STEAM GAUGE AND LANTERN CO.,

SYRACUSE, N. Y.

Western Branch, 25 Lake St., Chicago, Ill.



Do you make Lemonade?

If so you want our Squeezer. Positively
the best. Suitable for any size Lemon.
Write for catalogue and prices.

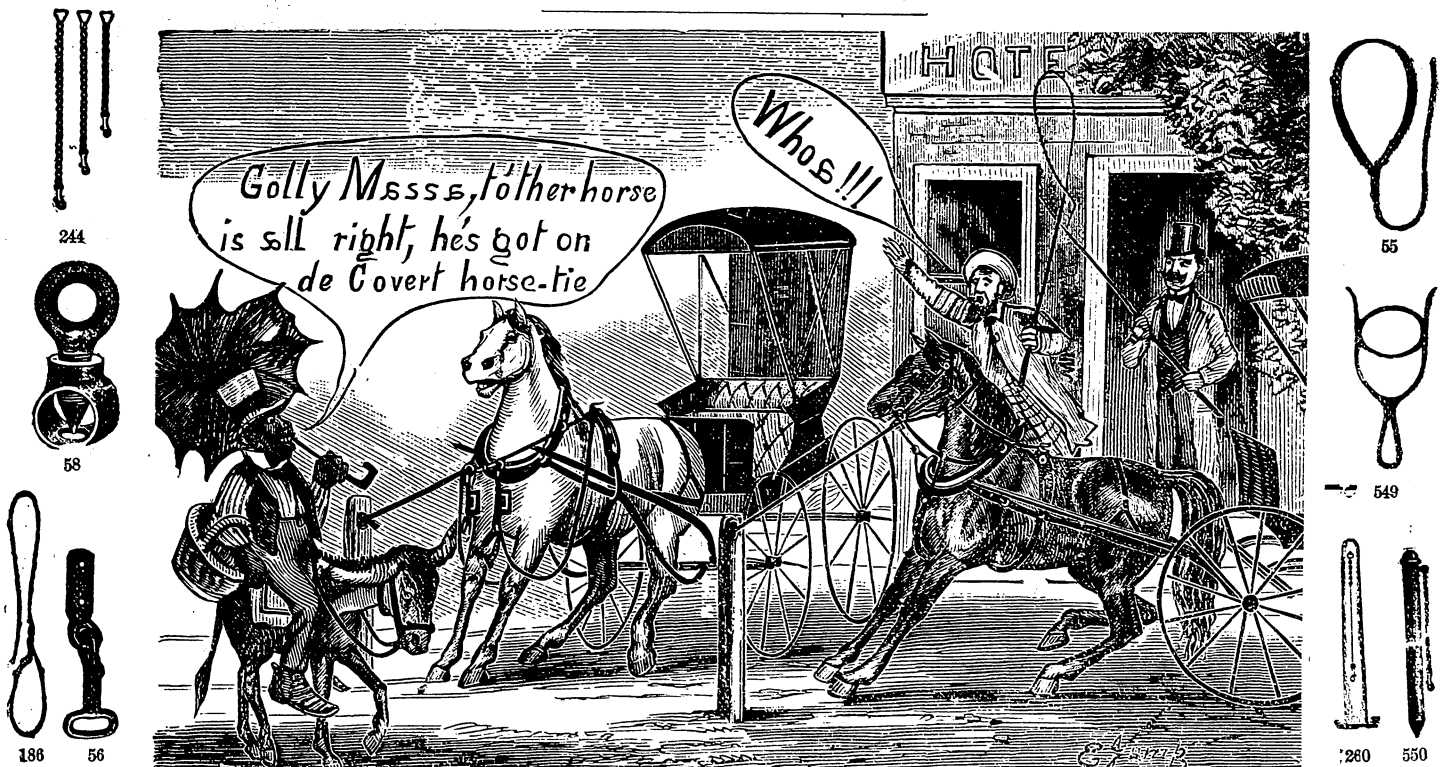
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COVERT MFG. CO.,

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Covert Patent Adjustable Soldering Irons.



The only Safe and Reliable Ties for firmly securing Horses are the Patent Covert Rope Horse Ties.

COVERT'S CELEBRATED HARNESS SNAPS, CHAIN GOODS, ROPE AND WEB GOODS
ARE SOLD BY ALL LEADING JOBBERS AT MANUFACTURERS' PRICES.

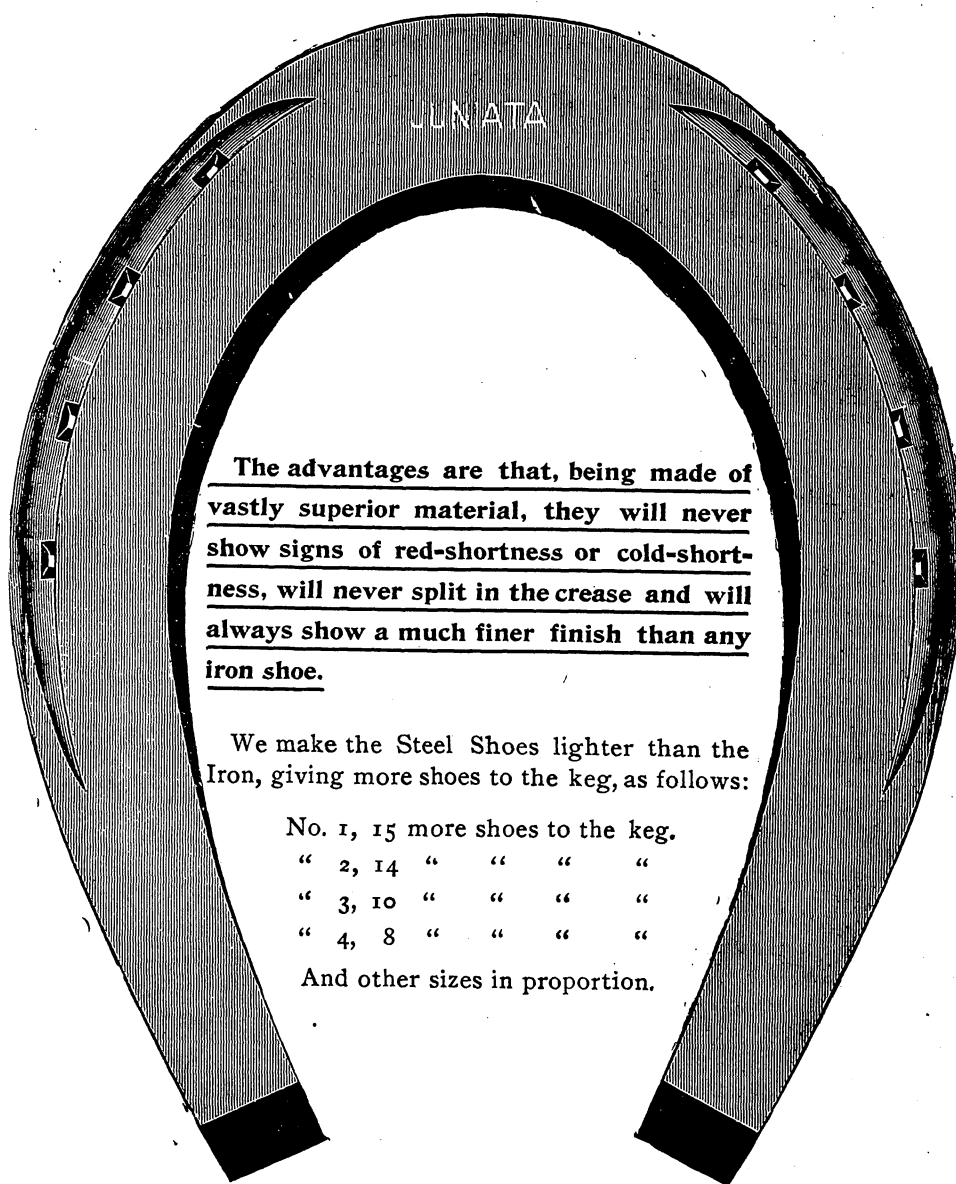
COVERT MFG. CO.,

WEST TROY, N. Y.

STEEL HORSE SHOES.

SHOENBERGER & CO., PITTSBURGH, PA.,

After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes, and are now making from this steel Extra Swaged, and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors. We are at present making our Roadster Pattern Horse Shoes out of Iron, but we will make them of Steel also within a short time.



The advantages are that, being made of vastly superior material, they will never show signs of red-shortness or cold-shortness, will never split in the crease and will always show a much finer finish than any iron shoe.

We make the Steel Shoes lighter than the Iron, giving more shoes to the keg, as follows:

No. 1, 15 more shoes to the keg.

" 2, 14 " " " "

" 3, 10 " " " "

" 4, 8 " " " "

And other sizes in proportion.

No. 2 EXTRA SWAGED FRONT.

We also beg to say that we have introduced improved machinery into our new factory and have doubled our capacity, and are now prepared to furnish the best shoe, either iron or steel, ever offered to the trade.

We would also call your attention to our Improved Steel Toe Calk, equal to any in the market. To secure the best wearing qualities use sand or borax in welding on a calk and cool off at a dark red, or still better, cool off without plunging in water. We make sizes numbers 1, 2, 3, 4, 5 and 6, packed in 25-pound boxes.

Write to us for information and prices, or apply to jobbers and dealers, who sell them everywhere.

SHOENBERGER & CO.,

JUNIATA IRON AND STEEL WORKS - - - PITTSBURGH, PA.

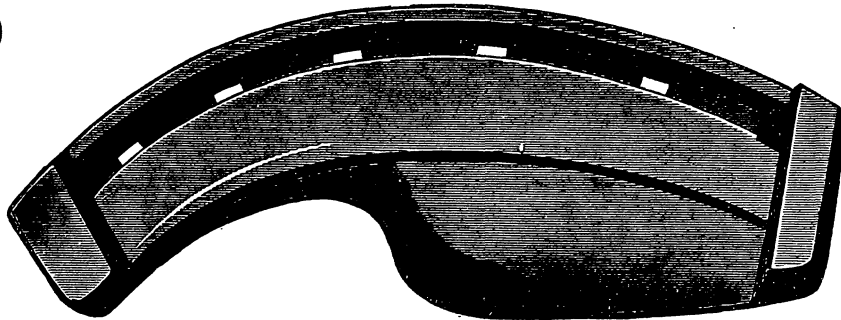
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SCRANTON, PA

CARRIAGE HARDWARE ^{AND}

SPECIAL DROP FORGINGS.

FORGED
OX
SHOES.



Made under Deebie's Patent, Aug. 9, 1887.

Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

IT IS JUST RIGHT.



HORSE AND MULE SHOES.

Superior Quality, Shape and Finish.

BRYDEN HORSE SHOE CO.,
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RHODE ISLAND PERKINS HORSE SHOE CO.,
MANUFACTURERS OF

Horse and Mule Shoes of the Perkins Pattern.

SPECIALTIES:—X L Steel Shoes, Toe Weight Shoes and Goodenough Shoes.

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THE NEW DIAMOND STATE HORSE AND MULE SHOES.

JUST TRY THEM and YOU will say they excel all others.

MANUFACTURED BY

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WILMINGTON, DELAWARE.

Other "high grade" specialties in Rivets, Spikes, Splice Bars, Track and Machine Bolts, Blank Nuts, Stay Bolt Iron, Horse Shoe Iron, Bar Iron, &c.

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206 So. Fourth St.

{ Correspondence invited }

NEW YORK OFFICE,
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Elegant Iron.

Beautiful Shape.

HORSE SHOES,
Light, Medium and Heavy.
MULE SHOES,
Light, Medium and Heavy.

Illustrated booklet and prices to all parts of the world on application.

OLD DOMINION IRON AND NAIL WORKS CO.,
ARTHUR B. CLARKE, President.

Chicago Office, 45 La Salle St.

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BURDEN'S

HORSE SHOES.

"Burden Best"

Iron

Boiler Rivets.

The Burden Iron Co.

TROY, N. Y.

PHOENIX HORSE SHOES.

PHOENIX HORSE SHOE CO.,

ROLLING MILLS AND FACTORIES,

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Joliet, Ill.

NEW YORK OFFICE, No. 66 Reade St.

Standard Horse Shoe Co.,

Manufacturers of

HORSE AND MULE SHOES.

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"The Best Driving Nail."

HIGHEST AWARD
—AT—
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In the tests submitted before the judges on awards the Capewell No. 6 was shown to be 17 per cent. tougher than No. 8 of other makes.

"The Best Nail to Hold."

CAPEWELL HORSE NAILS,
MADE BY
THE CAPEWELL HORSE NAIL CO., - - - HARTFORD, CONN.

Office of D. G. BURNHAM,
Director of Works, World's Columbian Exposition,
JACKSON PARK, CHICAGO, ILL.

October 23, 1893.

To THE CAPEWELL HORSE NAIL CO.:
Gentlemen—I have used your horse nails here on the horses belonging to the World's Columbian Exposition, and I think they are far superior to any others that I have ever used. As I have been in the horseshoeing business for about twenty-five years, I know what I am talking about.

Very respectfully,
HERMAN J. HENKE,
Foreman Blacksmith, World's Columbian Exposition.

The Capewell Patent Corrugated Horse Nail.

Needs No Clinching.

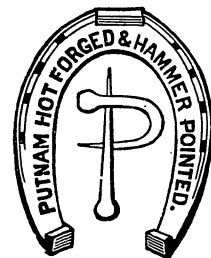
Highest Award

FOR

Supreme Excellence

TO

The PUTNAM Hot-Forged and Hammer-Pointed Horse NAILS,



At the *World's Columbian Exposition* at Chicago. A medal and diploma worded:
"Supreme excellence in material, method in manufacture, and quality of finished product; elasticity and smoothness combined with holding power in clinch. It allows the use of very small nails."

There is nothing beyond "supreme excellence," nor is there anything comprised in a horse nail, except the "material from which it is made," "the method of manufacture," and "quality of finished product." Putnam nails, by their "elasticity," give slightly to the expansion and contraction of the hoof while the horse is in motion; by their "smoothness," do not enlarge the nail holes in the hoof, while their "supreme excellence," in "holding power in the clinch," enables them to hold the shoe in the hardest service until worn out.

By the "use of small nails," large holes are avoided and money saved to the smith.

Thus it will be seen that the officials of the *World's Columbian Exposition* recognize what qualities go to make up a good horse nail and that only the "Putnam" contains them all.

PUTNAM NAIL CO.,
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H. D. SMITH & CO.,

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MANUFACTURERS OF THE BEST QUALITY

CARRIAGE MAKERS' HARDWARE,

MANUFACTURE THE LARGEST VARIETY OF

FORGED CARRIAGE IRONS

Of Best Material and Workmanship.

Send for Price and Illustrated List of

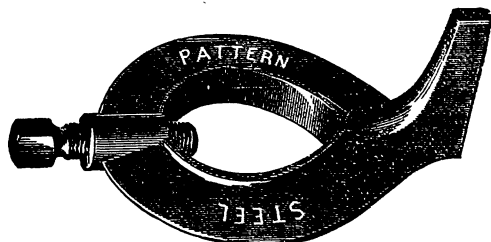
CHAMPLAIN

Manufactured by the NATIONAL HORSE NAIL CO.,
VERGENNES, VERMONT.

All Sizes. All Patterns. All Warranted. Sold Everywhere.

J. C. McCARTY & CO., Agents, New York.

LE COUNT'S LIGHT STEEL DOG,



WITH STEEL SCREWS.

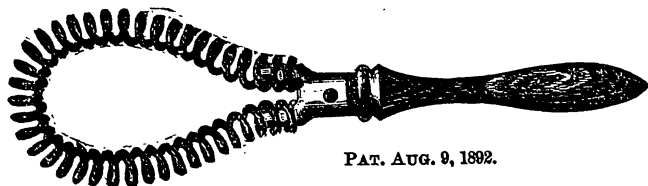
U. S. Standard.			Points Hardened.		
No.	Inch.	Price.	No.	Inch.	Price.
1.....	¾.....	\$0 35	7.....	1¼.....	\$1 00
2.....	¾.....	35	8.....	2.....	1 10
3.....	¾.....	60	9.....	2¼.....	1 40
4.....	1.....	60	10.....	3.....	1 50
5.....	1¼.....	75	11.....	3½.....	1 70
6.....	1¾.....	85	12.....	4.....	1 90

Small set of 8, \$5.50. Full set of 12, \$12

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G. W. LE COUNT, MANUFACTURER. SO. NORWALK, CONN., U. S. A.
These goods are for sale by CHAS. CHURCHILL & CO., Ltd., 21 Cross St., London, England.

THE BOSS DUST BEATER.



PAT. AUG. 9, 1892.

NEAT, DURABLE, AND DOES THE BUSINESS.

For removing dust and filth from Clothing, Upholstered Furniture, Rugs and Carpets it is just the thing. Will raise the nap and so improve the appearance. Will not, like other Dust Beaters, leave marks, nor tear the fabric. The coil is of steel wire secured in a malleable iron socket and attached to an enameled wooden handle. Just what everybody wants.

Sent by Mail, 35 Cents.

PEABODY & PARKS,
Manufacturers, TROY, N. Y.

P. F. BURKE, C. F. DEWICK & CO.
Successors to
Manufacturer of
PATENT STEEL
(Blunt and Sharp)
TOE-CALKS.
—ALSO—
BURKE'S IMPROVED
HORSESHOERS'
FOOT VICE.
Send for Circulars.
360 Dorchester Av. Dis for Wading
BOSTON, MASS. Sharp Calks.

Crescent
Horse and Mule Shoes,
BAR IRON.

CRESCENT HORSE SHOE
IRON CO.

Max Meadows, Va.

FROST'S ANTI-RATTLER
Pat. Jan. 20, 1880.
Cut One-half Size.
Sample pair sent to any hardware or saddlery firm by addressing
The Frost Thill Spring Co.,
Boston, Mass.

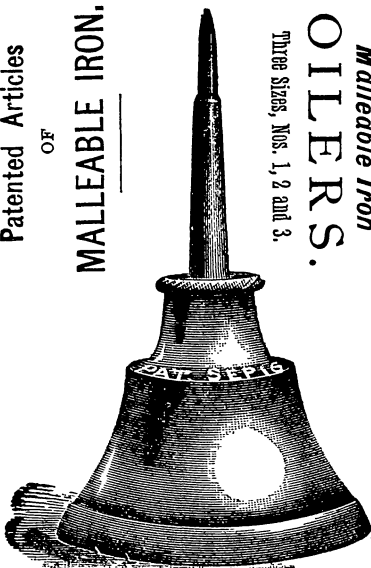
P. J. Conroy & Co.,
Paschall, PHILADELPHIA.
"CONROY"
Refrigerator Door
Fasteners
Have rapidly supplanted all others.
Refrigerator Trimmings.

BUFFALO SCALE CO., Buffalo, N. Y. SCALES OF ALL KINDS.

Patented Articles

OF

MALLEABLE IRON.



Three Sizes, Nos. 1, 2 and 3.

Malleable Iron
PATENT
OILERS.

New Improved

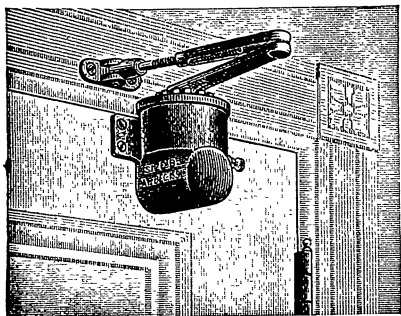
Hammer's Adjustable Clamps.
Mall. Iron Hand Lamps.
M. I. Hanging Lamps

New Pattern Heavy Screw Clamps.
Strongest in the market.

For Sale by all the Principal Hardware Dealers.
SEND FOR PRICE LIST.

MALLEABLE IRON CASTINGS
of superior quality, and Hardware Specialties
in Malleable Iron, made to order.

HAMMER & CO., Branford, Conn.



Bardsley's Liquid Door Check and Spring

Perfect in action, durable, neat in appearance, low in price and fully warranted. Responsible Agents wanted in the principal cities.

J. BARDSLEY, 149 & 151 Baxter St., New York.

HARDWARE DEALERS

CAN RECOMMEND THE

**CHAMPION METAL WINDOW
SASH CHAINS**

to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

MANUFACTURED ONLY BY

"THOMAS MORTON,"

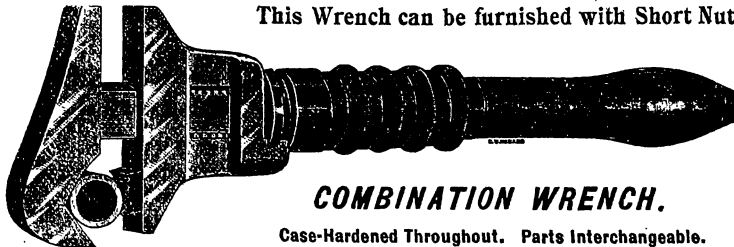
65 Elizabeth Street,

Write for Prices.

NEW YORK.

The Practical Polish and Varnish Maker.
By H. C. STANDAGE. A treatise containing 750 receipts and formulae for the manufacture of varnishes, polishes, &c. 12mo, cloth.....\$2.50
For Sale by DAVID WILLIAMS, 96-102 Rensselaer St., N.Y.

This Wrench can be furnished with Short Nut.

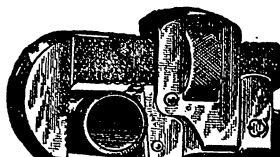


COMBINATION WRENCH.

Case-Hardened Throughout. Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the requisite combinations of a regular Nut Wrench, thus making a combination which has no equal. For Circulars and Price-List, address

BEMIS & CALL HARDWARE & TOOL CO., Springfield, Mass., U. S. A.



TRIMO PIPE WRENCH,

Forged Steel.

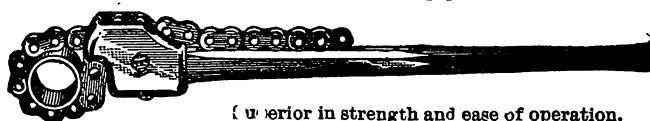
All parts Interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no trouble in close quarters. Does not crush the pipe.

TRIMO

**CHAIN
PIPE**

WRENCH.



**TRIMO
BASIN WRENCH.**

**TRIMONT MFG. CO., ROXBURY
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BROCK'S PATENT DROP FORGED CHAIN PIPE WRENCH.

LATEST IMPROVED MODEL.



Seven Sizes. Adapted for pipe from 1/8 in. to 12 in. diameter. The best pipe wrench now offered for sale.

REVERSIBLE, INTERCHANGEABLE, DURABLE, ECONOMICAL.

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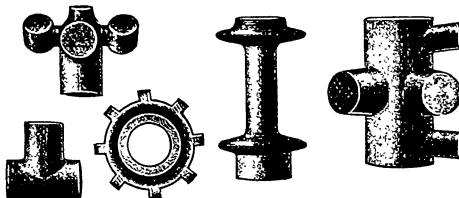
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Engineers' Wrenches, Lathe Dogs, Keys, Thumb Screws and Collars.

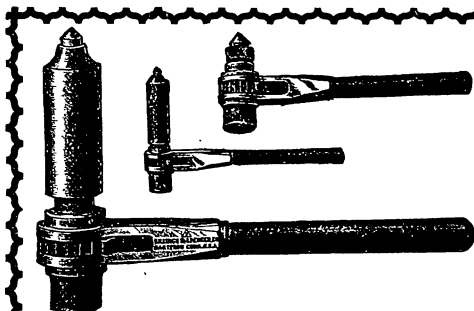
Special Drop Forgings of Every Description from Iron, Steel, Copper and Bronze.

9 to 15 RICHARDS STREET,

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WYMAN & GORDON
WORCESTER, MASS.
DROP FORGINGS



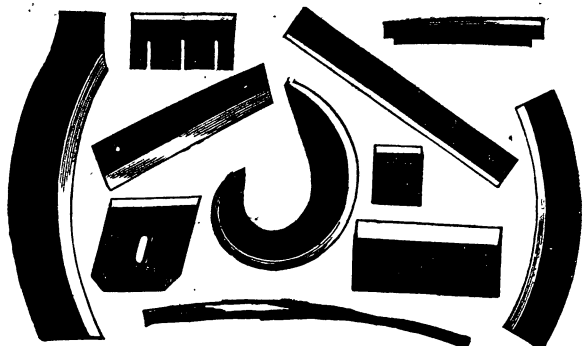
**Genuine Packer
Ratchet Drills**
... AND ...

**Billings' Double-Acting
Ratchet Drills**

Drop Forged from Best
Steel for the purpose

**THE BILLINGS & SPENCER COMPANY, Hartford, Conn.,
DROP FORGINGS OF EVERY DESCRIPTION**

London House: Chas. Churchill & Co., 21 Cross St., Finsbury.



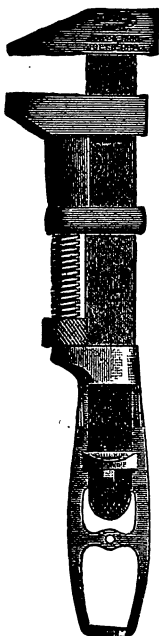
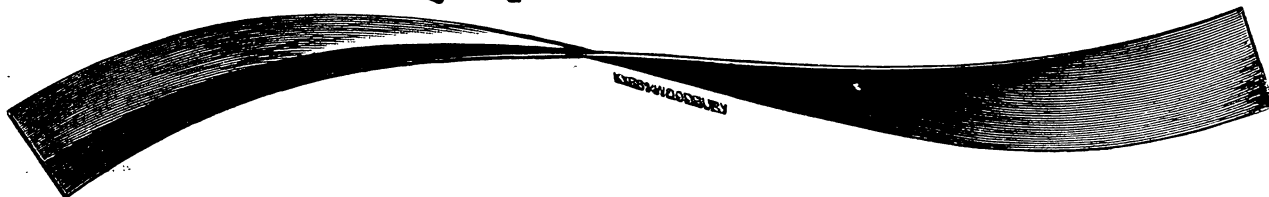
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WORCESTER, MASS.

Manufacturers of MACHINE KNIVES.

Shear Blades and Strips, Moulding Cutter Plate, Die Stock for Leather, Cloth and Paper Cutting Dies. Lawn Mower and Hay Cutter Knives of every description.

End view of Plated Stock for Dies, Lawn Mower Knives, Blades Etc., showing how the Steel is laid.



L. COES'

Genuine Improved
KNIFE HANDLE
PATENT

Screw Wrenches

MANUFACTURED BY
COES WRENCH CO.,
WORCESTER, MASS.

Established in
1839.
Registered
March 31, 1874.

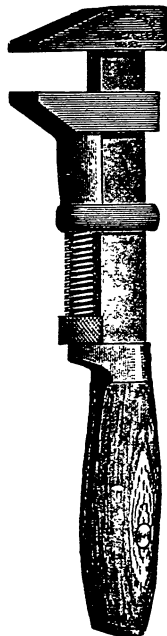
Patented July
6, 1880.
Patented July
8, 1884.

Sectional View Illustrates our New Knife Handle, showing Malleable Iron Frame and Shank of Bar keyed into position.

1/2" Straight Bar, Extra Long Nut for Screw in Jaw.

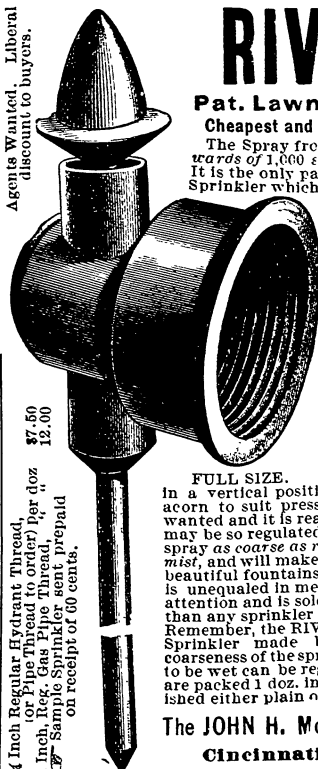
The BEST MADE and STRONGEST WRENCH in the MARKET.

J. C. McCARTY & CO.,
JOHN H. GRAHAM & CO., } New York Agents.



• IMPROVED MINE LAMP •
FOR ANTHRACITE AND
BITUMINOUS
MINING
6 DIFFERENT
STYLES
OF SPOUTS.
SAMPLE 15¢.
B.E. LEONARD, Scranton, Pa.

SEAMLESS
BRASS
COLLAR
BRASS HINGE
Lid Solid
No SOLDERING



RIVAL

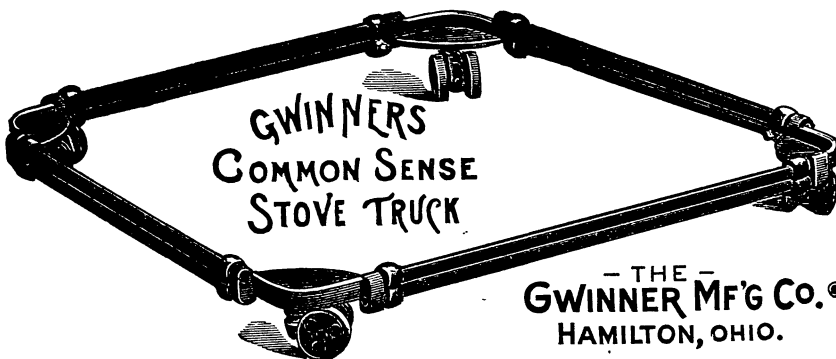
Pat. Lawn Sprinkle
Cheapest and Best in Use.

The Spray from it covers upwards of 1,000 sq. feet of lawn. It is the only patent adjustable Sprinkler which is adaptable to any water pressure. Being made of brass, and having no revolving parts to wear out, or small openings to clog up, it can be operated with sandy or muddy water as well as clear, and will last for years. To operate, screw Sprinkler on end of hose, stick the rod in to the ground in a vertical position, adjust the acorn to suit pressure and spray wanted and it is ready for use. It may be so regulated as to throw a spray as coarse as rain or as fine as mist, and will make one of the most beautiful fountains imaginable. It is unequalled in merit, requires no attention and is sold at a less price than any sprinkler in the market. Remember, the RIVAL is the only Sprinkler made by which the coarseness of the spray and the area to be wet can be regulated. They are packed 1 doz. in a box, and finished either plain or nickel plated.

The JOHN H. MCGOWAN CO.
Cincinnati, Ohio.

Agents Wanted. Liberal discount to buyers.

1/4 Inch Regular Hydrant Thread, (or Pipe Thread to order) per doz \$7.50
1 Inch, Reg. Gas Pipe Thread, 12.00
1/2" Sample Sprinkler sent prepaid on receipt of 60 cents.

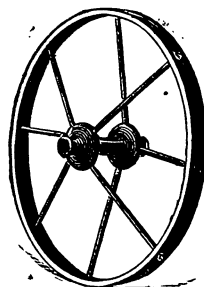


WINNERS
COMMON SENSE
STOVE TRUCK

— THE —
GWINNER MFG CO.
HAMILTON, OHIO.

Toledo Wheelbarrow Works,

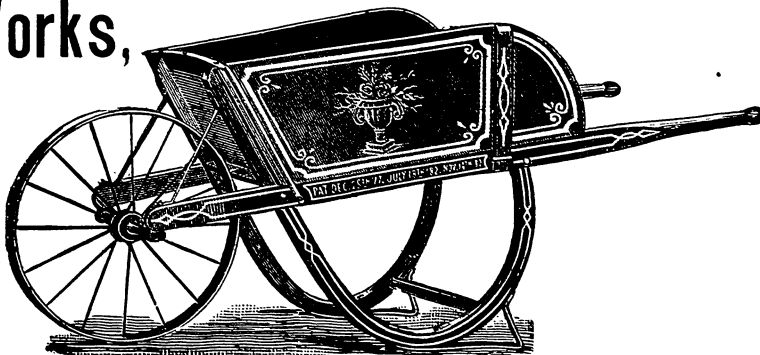
TOLEDO, OHIO.



We call the trade's attention to the construction of our new steel wheel.

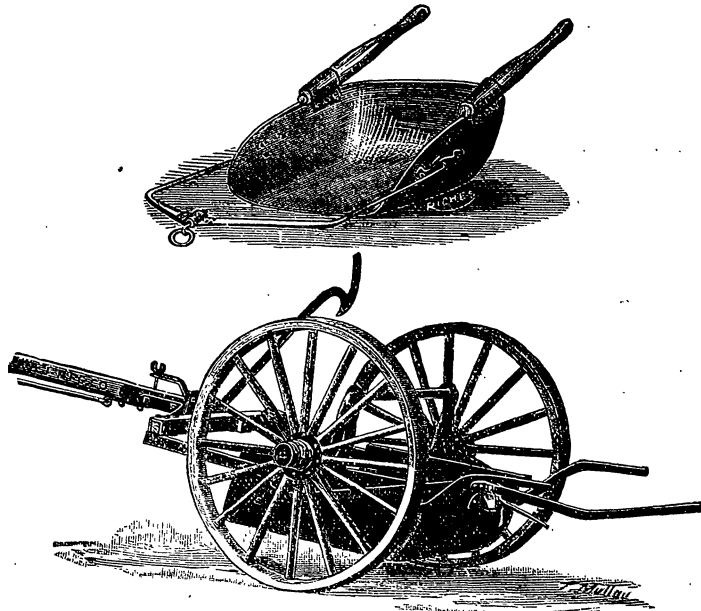
We use a 3/8 round spoke which is cast in hub and passes through tire in wedge shape as shown in sectional cut. In this mode we get twice the strength of the spoke, as in dumping the spoke can't push through or pull out. This sectional view explains the principle fully.

G. W. THOMAS & CO.



Field and Road

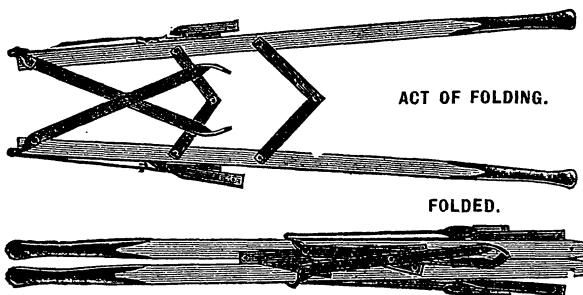
Implements,
R. R. Plows,
Wheelbarrows,
Trucks,
Steel Wheel-
barrows,
Steel Sinks,
Water Troughs
and Pressed
Steel Shapes a
specialty.



Our capacity
is immense.

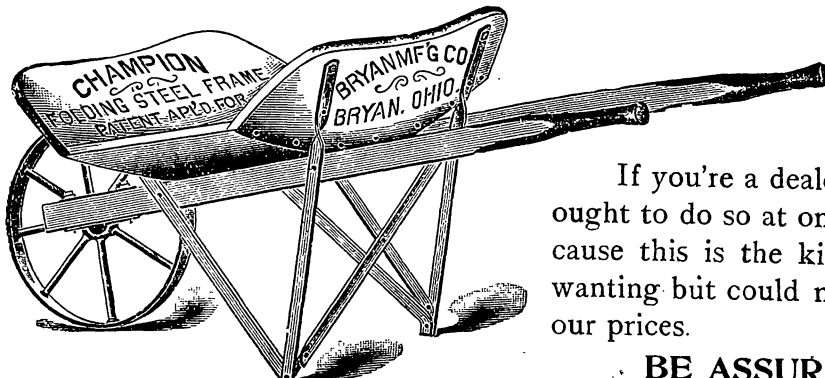
Our produc-
tions are su-
perior and pos-
sess greater
and more feat-
ures of merit
than any other
and prices are
lower.

The Kilbourne & Jacobs Mfg. Co.,
COLUMBUS, O., U. S. A.



The Champion

Folding Steel Frame Barrow
Beats 'Em All.



If you're a dealer and haven't ordered a sample you ought to do so at once. It's money in your pocket, because this is the kind of barrow your customer's been wanting but could never get. Write us anyway and get our prices.

BE ASSURED IT WILL PAY YOU.

ALL STEEL WHEELBARROWS & SCRAPERS

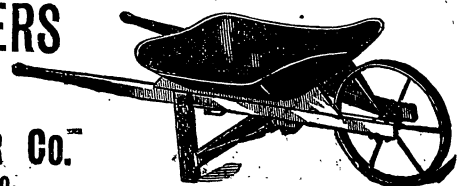
MANUFACTURED BY

AMERICAN STEEL SCRAPER CO.

104 Court Street, SIDNEY, O.

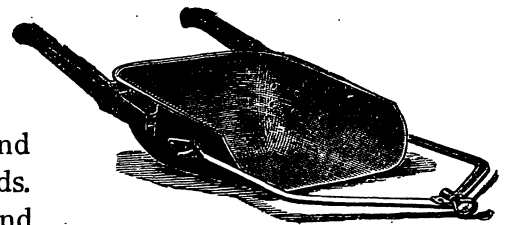
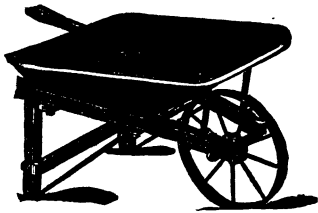


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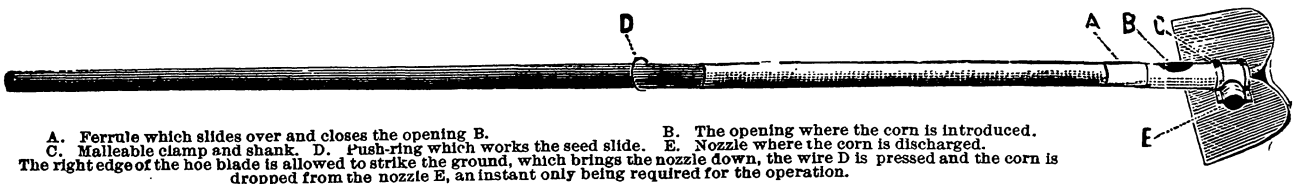
GOOD ROADS

would make traveling for Coxe's Army good. Good tools and implements make good roads. We make good Scrapers and Wheelbarrows at good prices. Write for net quotations.



Sidney Steel Scraper Co., 924 Poplar Street, SIDNEY, OHIO.

AYERS' COMBINED HAND PLANTER AND HOE.



A. Ferrule which slides over and closes the opening B. B. The opening where the corn is introduced.
C. Malleable clamp and shank. D. Push-ring which works the seed slide. E. Nozzle where the corn is discharged.
The right edge of the hoe blade is allowed to strike the ground, which brings the nozzle down, the wire D is pressed and the corn is dropped from the nozzle E, an instant only being required for the operation.

This is a convenience everywhere, besides being the only planter adapted for hard, rough and rocky ground requiring a hoe in covering and in such cases it enables the workman to accomplish twice the usual service. For replanting and first hoeing it is especially adapted, as it is both a hoe and planter as required. As a hoe it is cheap at 50 cts., which leaves only \$1.50 as the additional cost for the planter, which is nothing in comparison to the convenience of always having a planter in hand supplied with seed during the operation of hoeing. With beans and peas it is even more accurate than with corn. There is hardly a farmer in the country who would not find it an economy to have one of these planters, however many other planters he may have or however good they may be. Price \$2.00, \$15.00 per doz., \$7.50 per 1/2 doz., cash with order. Shipments f. o. b., New York or Petersburg, Va., as desired. Correspondence solicited.

J. R. AYERS, Patentee and Manufacturer, PETERSBURG, VA.

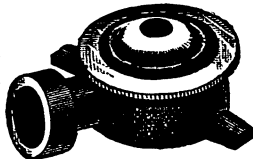


Japanese No. 12, Adjust.

LAWN SPRINKLERS.

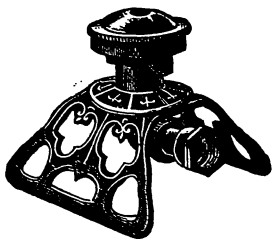
We manufacture the BEST and CHEAPEST Lawn Sprinklers in the World.

Cactus No. 5.



The only Sprinklers which have no revolving parts to leak or wear out.
The only Sprinklers free from small holes, and which cannot become clogged with gritty substances.
The only Sprinklers which are adjustable and will give a spray as fine as the mist of Niagara, or as heavy as the area of the supply pipe.

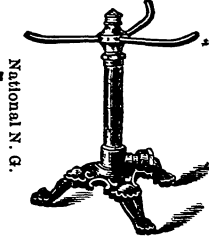
The best Sprinklers for high pressures, and the only sprinklers which will give satisfaction with low pressures
We also manufacture the old style revolving sprinklers, but for our own use would not have them



Cactus No. 5.

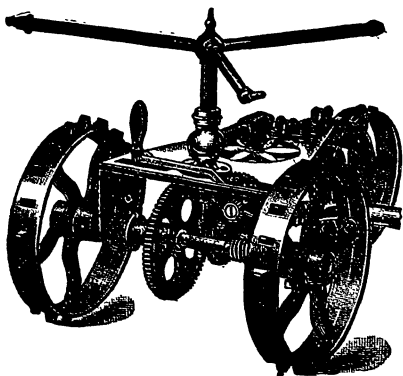
Ette & Henger Mfg. Co.

ST. LOUIS, MO.



National N. G.

SEND FOR DESCRIPTIVE CIRCULARS.



LITTLE GIANT Traveling Lawn Sprinkler.

PATENTED.

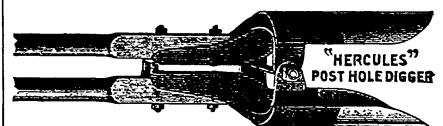
Can be set to travel anywhere from 15 to 500 feet per hour, either on a straight line or in a circle, and can be gauged to throw water over a swath 5 to 50 feet in width.

Highest Award at World's Columbian Exhibition.

SEND FOR CIRCULAR.

PORTLAND LAWN SPRINKLER CO.,
PORTLAND, ME.

The Hercules

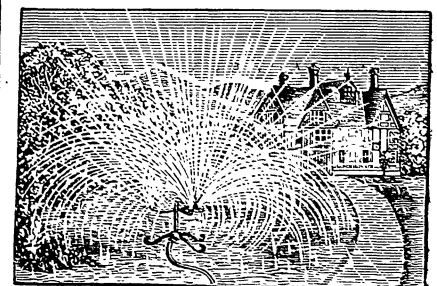


Is the only tool worthy the name of Post Hole Digger. Do not be deceived into buying cheap and inferior affairs, claimed to be "just as good as the Hercules." It is the Leading Digger on the market to-day, and has the largest sale. For sale by leading jobbers everywhere. We are also headquarters on Lawn Rakes, Lawn Sprinklers, Saw Sets, Curry Combs, etc.

F. E. KOHLER & CO.,
CANTON, OHIO, U. S. A.

GENUINE

"CALIFORNIA" Lawn Sprinkler.



MANUFACTURED BY
BLAIR MANUFACTURING CO.
SPRINGFIELD, MASS.

Write for prices.

Also makers of the most complete line of Lawn Mowers on the market.

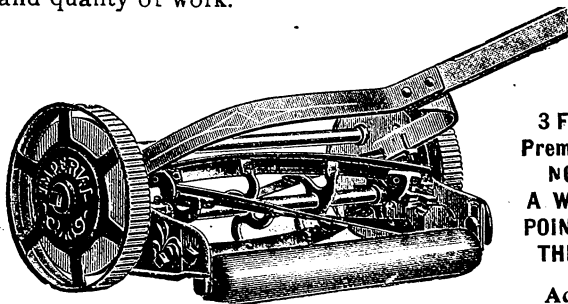
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THE BEST IN THE WORLD.

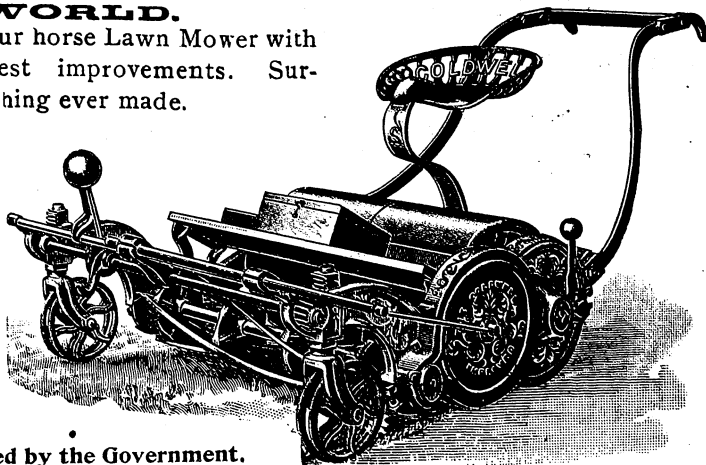
This is our hand mower that was awarded the **Highest Premium** and attracted so much attention at Chicago, for its lightness of draught, durability and quality of work.

This is our horse Lawn Mower with all the latest improvements. Surpasses anything ever made.



3 First
Premiums
NOT
A WEAK
POINT IN
THEM.

Adopted by the Government.



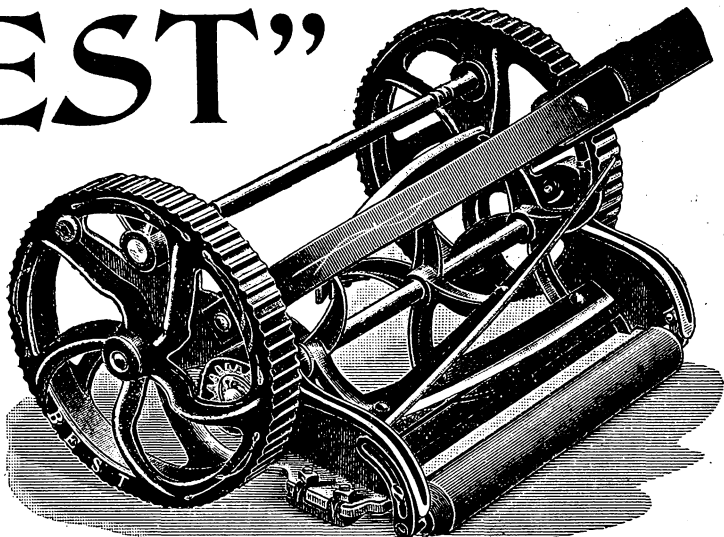
"THE BEST"

HIGH GRASS MOWER

All wearing parts in sight and easy to get at for oiling. Made of the highest grade of material throughout, and is by far the **best low priced machine** on the market to-day.

GIVES ENTIRE SATISFACTION WHEREVER TRIED.

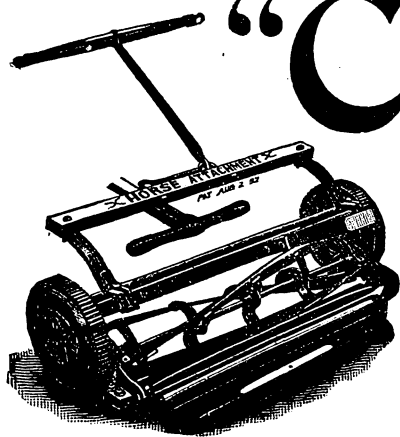
GET OUR PRICES BEFORE PLACING YOUR ORDERS.



DILLE & ANDERSON, - - - - RICHMOND, IND.

"CHIEF" MOWER

With Horse Attachment.



TEN INCH TRACTION WHEEL. EXCELS FOR FINE QUALITY OF MATERIAL AND FINISH. SIMPLE ADJUSTMENTS, SMOOTH CUTTING.

THE ONLY FIRST-CLASS COMBINATION MOWER ON THE MARKET. PRICES LOW, TERMS REASONABLE.

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LAWN MOWERS,
RAKES, Etc.

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THE LAWN MOWER'S PARTNER.

The only practical **Grass Carrier** in the world. It received the Highest and Only Award at the World's Fair. It is adjustable to all sizes and makes of Mowers.

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Dunham, Carrigan & Hayden Co., San Francisco,
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Haven, Conn.
Walbridge & Co., Buffalo, N. Y.

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If your Jobber does not handle it write for prices and circulars to

J. GLENNON & CO. (Patentees and Sole Manufacturers), 2622 Shields Ave., Chicago.

And Now The Continental Lawn Mower!

Not an ounce

of poor material

in its construction.

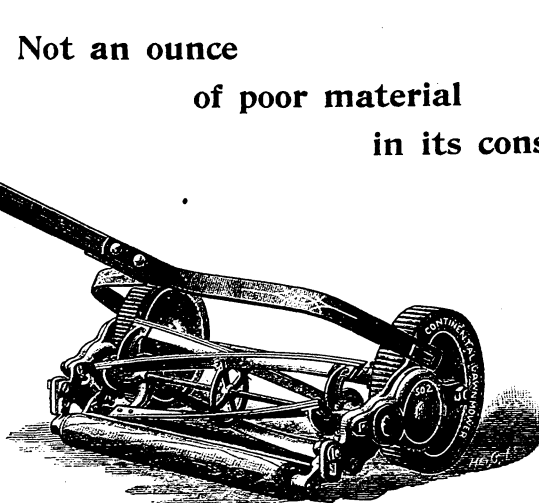
High Grade.

Double Geared.

Highest Medal and Diploma at
World's Fair.

Also manufacturers of Pennsylvania, New Quaker City, Great American, Rapid Transit, New Departure Mowers. Also Horse and Pony Mowers, Grass Catchers, &c.

Supplee Hardware Co., Philadelphia.



SHOWING STYLE OF LOW WHEEL.

McGuire's ♦ Diamond.

MANUFACTURED BY

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PRICE-LIST.

Wheels, 8 Inches High. Cutter, 5½ Inches Diameter.

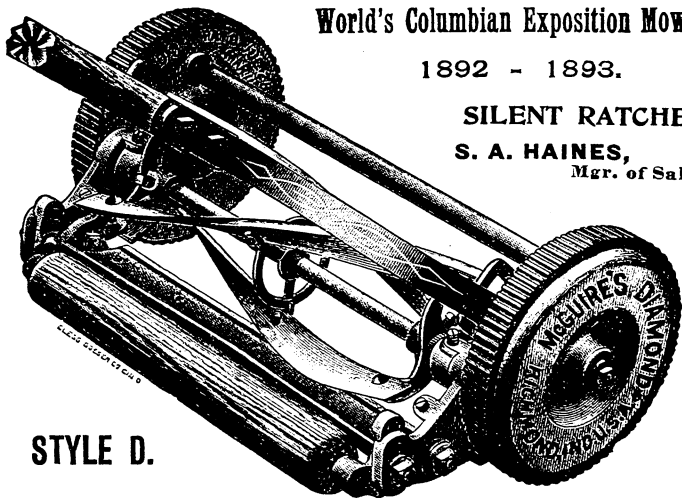
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10 Inch	\$13.00	Trade,
12 "	14.00	70 per cent.,
14 "	15.00	F.O.B. Factory.
16 "	16.00	
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PHOSPHOR BRONZE JOURNAL BEARINGS. BEST QUALITY STEEL.

This is the Mower contracted for by the Chief of Construction at the Columbian Exposition; was used on the lawns at the World's Fair grounds during the preparatory season of 1892, and being approved by the Landscape Architects, was adopted exclusively for 1893.

If you wish a first-class Mower in all respects, one that is fully warranted.

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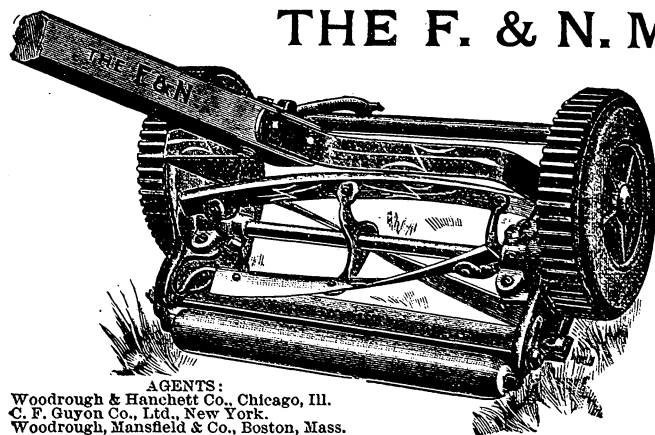
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World's Columbian Exposition Mower.

1892 - 1893.

SILENT RATCHET.

S. A. HAINES,
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Manufacturers of
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Grass Catchers,
RICHMOND, IND., U. S. A.

THE
F. & N.
LAWN
MOWER
" '94."

Solid Steel Cutter Bar. Reel
Knives adjusted to Cutter
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—Sole Manufacturers of—



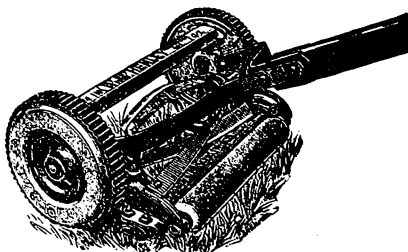
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AND
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LAWN
MOWERS
ALSO
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Send for Illustrated Catalogue.

HENLEY'S MOWERS

For Lawns and Parks

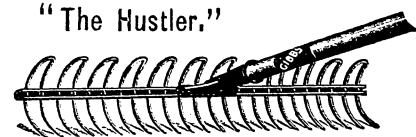
Are first class, high grade machines,
made of the best materials, neat,
symmetrical, strong and unexcelled
in construction and ease of oper-
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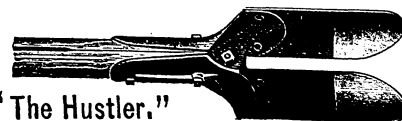
"The Hustler."



By buying the Hustler Lawn Rakes you have
the cheapest and best made. All leading jobbers
handle them.

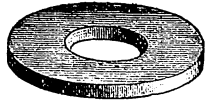
GIBBS MFG. CO., Canton, Ohio.

Our line of Post Hole Diggers comprises 5 of
the Best Known Styles on the market. Prices
low.



"The Hustler."

WROUGHT WASHERS



True
to
Gauge

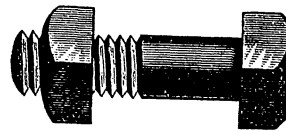
Made from specially rolled plate by our own patented machinery.

Every washer flat, with hole in true center. Sold in 200 lb. kegs, or 1 and 5 lb. paper boxes.

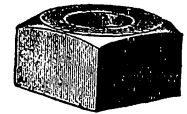
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HIGH GRADE



Machine
Bolts



Hot pressed
Nuts

Stamped to size. Guaranteed extra quality.
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Pennsylvania Bolt & Nut Co.

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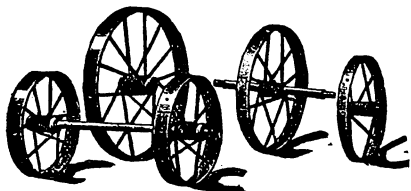
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WHEELS. WHEELS. WHEELS.



The best there is made for Wheelbarrows and Trucks. Send for Circular and Prices.

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THE Arnold Metal Wheel Co.

Mention The Iron Age. New London, Ohio

CALF WEANER "Shaw's Pat."

MADE BY

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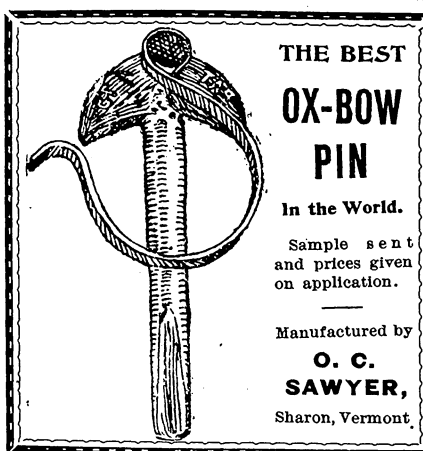


Put Weaners on Calves and turn them out with the cows.
No wounds. No fretting.
"It is the only machine I ever had that worked perfectly in every way."

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Sample sent and prices given on application.

Manufactured by
O. C.
SAWYER,
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CYCLONE CORN SHELLER.

Will Shell a Bushel of Corn

in 4 Minutes.

BEST
SHELLER
in the world.

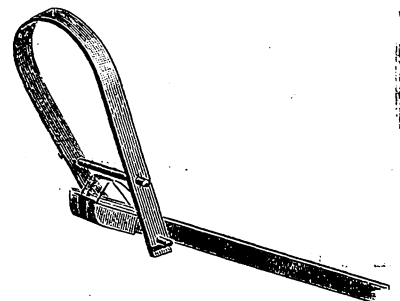
All Machines
Warranted.



GARRY IRON ROOFING CO., Sole Manufacturers and Owners, Cleveland O., U. S. A. Mention Iron Age.

Improved American.

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THE BISHOP POKES are the best, as they are made from good material, are very strong, and have all the latest improvements up to date. Shun other pokes said to be just as good, for they are not. For names of Bishop Pokes we refer to price-list in Iron Age. They are for sale by nearly every jobber of hardware in the U. S.

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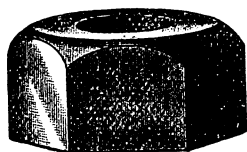
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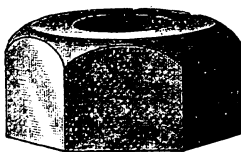
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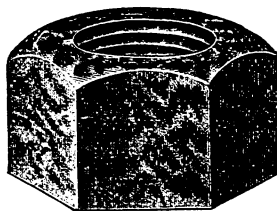
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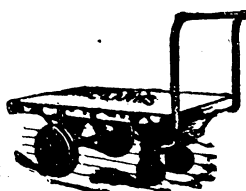


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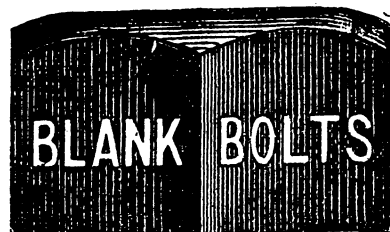
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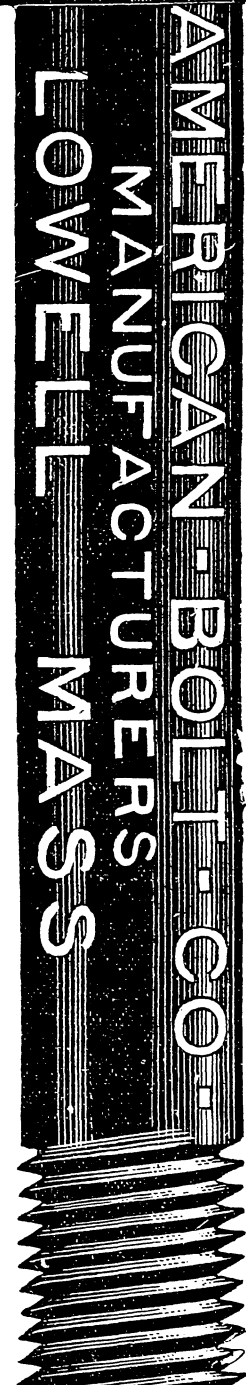
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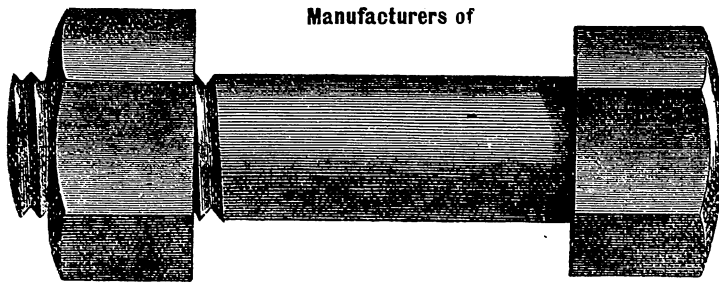
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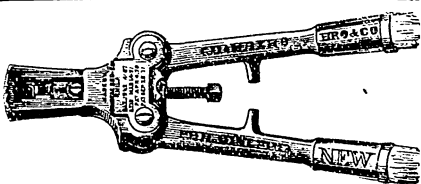
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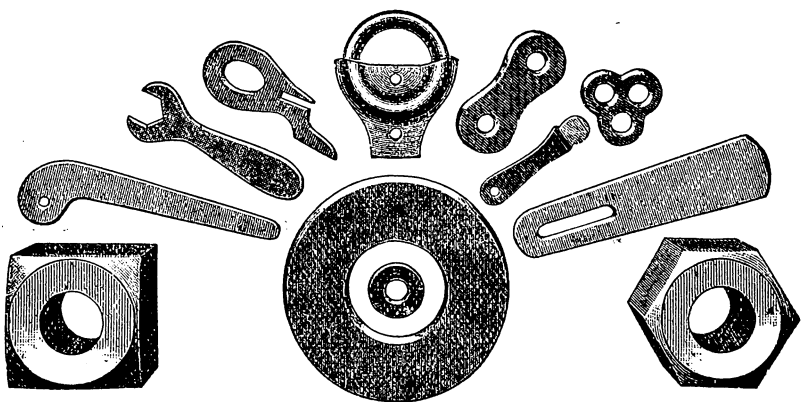
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Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Sterling Emery Wheel Co., 174 Fulton St., N. Y.
Sturtevant Mill Co., Boston, Mass.
- Emery Wheel Dressers.**
Bay State Stamping Co., Worcester, Mass.
- Enamels.**
Nubian Iron Enamel Co., Cragin, Ill.
- Engineers and Contractors.**
Aiken, Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa.
Lean, D. R. Co., Pittsburgh, Pa.
McClure, Amos & Co., Pittsburgh, Pa.
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Smythe, S. R. Co., Incorporated, Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
- Engines, Gas.**
Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg., N. Y.
- Engines, Gas and Gasoline.**
Springfield Gas Engine Co., Springfield, Ohio.
- Engines, Steam, Makers of.**
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Chandler & Taylor Co., Indianapolis, Ind.
Erie Engine Works, Erie, Pa.
Lane & Bodley Co., Cincinnati, Ohio.
Norwalk Iron Works Co., So Norwalk, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Phila. Engineering Works, Phila., Pa.
Southwark Foundry & Machine Co., Phila., Pa.
Tod, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.
- Exhaust Tumblers.**
Sweetser, W. A., Brockton, Mass.
- Expansion Bolts.**
Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O.
Steward & Romaine Mfg. Co., Phila., Pa.
- Faucets, Self-Measuring.**
Lane Bros., Poughkeepsie, N. Y.
- Faucets, Wooden, Makers of.**
John Sommer's Son, Newark, N. J.
- Feed-Water Heaters.**
Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N. Y.
Harrison Safety Boiler Works, Phila., Pa.
National Pipe Bending Co., New Haven, Conn.
Taunton Locomotive Mfg. Co., Taunton, Mass.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Elmwood, Conn.
- Fence Ratchet.**
Schriver, O. P. & Co., Cincinnati, O.
- Fencing, Iron and Wire.**
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Cleveland Fence Co., Indianapolis, Ind.
Clinton Wire Cloth Co., Clinton, Mass.
Gilbert & Bennett Mfg. Co., 43 Cliff St., Kilmer Mfg. Co., Newburgh, N. Y.
McCallip Fence & Wire Wks., Columbus, Ohio.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
- Files, Importers of.**
Moss, F. W., 80 John St., N. Y.
- Files and Rasps, Manufacturers of.**
Arcade File Works, Anderson, Ind.
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond, Phila.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
- Fire Brick, Makers of.**
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer, B. & Sons, Foot E. Houston St., N. Y.
McLeod & Henry Co., Troy, N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro., Woodbridge.
- Fire Doors.**
Victor Mfg. Co., Newburyport, Mass.
- Fishing Tackle.**
Dane, Stoddard & Kendall, Boston, Mass.
- Flint and Emery Paper.**
Baeder, Adamson & Co., Phila., Pa.
- Flour Sifters.**
Bromwell Brush & Wire Goods Co., Cincinnati, Ohio.
Meyers, Fred, J. Mfg. Co., Hamilton, O.
- Flue Cleaners.**
Mackey, Jas. T., St. Louis, Mo.
- Fodder Cutters.**
Silver Mfg. Co., Salem, O.
- Forges, Portable, &c.**
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant, B. F. Co., Boston, Mass.
- Forgings, Iron and Steel.**
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Frankford Steel Co., Phila., Pa.
Scranton Forging Co., Scranton, Pa.
U. S. Projectile Co., Brooklyn, N. Y.
- Forks, Hay and Manure.**
Iowa Farming Tool Co., Ft. Madison, Iowa.
- Foundry Facings.**
Dixon, Jos., Crucible Co., Jersey City, N. J.
S. Obermayer Co., Cincinnati, O.
Smith, J. D., Fdy. Supply Co., Cinn., O.
- Foundry Riddles.**
Estey, W. S., 65 Fulton, N. Y.
- Foundry Supplies.**
Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Smith, J. D., Fdy. Supply Co., Cinn., O.
- Friction Clutches.**
Brown, A. & F., 17 Day St., N. Y.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.
- Friction Cone.**
Evans Friction Cone Co., Boston, Mass.
- Galvanizing Kettles.**
Sands, Thos., Nashua, N. H.
- Garden Tools.**
Dunlap, C. W., Box 2703, New York.
- Gas Producers.**
Wood, R. D. & Co., Philadelphia, Pa.
- Gas & Steam Fitters' Supplies.**
Pancoast, Henry B. & Co., Phila., Pa.
- Gauge, Rolling Mill.**
Haines Gauge Co., Philadelphia, Pa.
- Gear Cutters.**
D. E. Whiton Mach. Co., New London, Conn.
- Gears.**
Boston Gear Works, Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.
U. S. Projectile Co., Brooklyn, N. Y.
- Glass Cutters.**
Monce, S. G., Bristol, Conn.
- Glue.**
Baeder, Adamson & Co., Phila., Pa.
Dodd, A. W. & Co., Gloucester, Mass.
Russia Cement Co., Gloucester, Mass.
- Grass Carriers.**
Glennon, J. & Co., Chicago, Ill.
- Grass Catchers.**
Supplee Hardware Co., Phila., Pa.
- Grinding and Polishing Machines.**
Herrick & Cowell, New Haven, Conn.
Norton Emery Wheel Co., Worcester, Mass.
- Grindstone Dressing Machinery.**
Blake & Johnson, Waterbury, Conn.
- Grindstones.**
Cleveland Stone Co., Cleveland, O.
- Gun Implements.**
Union Hdw. Co., Torrington, Conn.
- Gunpowder, Makers of.**
Lafin & Rand Powder Co., 29 Murray St., N. Y.
- Handles.**
New York Mallet and Handle Wks., 456 E. Houston St., N. Y.
Piqua Handle & Mfg. Co., Piqua, Ohio.
- Hangers, Door.**
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.
- Hardware Comm'n Merchants.**
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.
- Hardware Manufacturers.**
Dunlap, C. W., Box 2703, New York.
Russell & Erwin Mfg. Co., Chambers St., New York.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn.
- Hardware Mfrs.' Agents.**
Bingham, W. Co., Cleveland, O.
Clarke, Thomas, St. John, N. B.
Graham, John H. & Co., 113 Chambers.
Sickles, Sweet & Lyon, 35 Barclay, N. Y.
- Hardware Specialties.**
Acme Shear Co., Bridgeport, Conn.
Burger Bros., Philadelphia, Pa.
Clark Mfg. Co., Buffalo, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Gwinner Mfg. Co., Hamilton, O.
Haines & Zimmerman, Phila., Pa.
Johnson, S. C., Racine, Wis.
- Harness Snaps.**
Cover Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.
- Hoisting Machines.**
Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co., Cleveland, Ohio.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E. Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
McGow, Jos. F. & Co., 26 Warren St.
Marls & Beckley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis.
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Spiegel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.
- Hollow Ware.**
Avery Stamping Co., Cleveland, O.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
- Hollow Ware, Aluminum.**
Illinois Pure Aluminum Co., Lemont, Ill.
Wohler Aluminum Co., Chicago, Ill.
- Horse Nails, Makers of.**
Capewell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
- Horse and Mule Shoes, Makers of.**
Bryden Horse Shoe Co., Catsaqua, Pa.
Burton Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.
- Hose Menders.**
Hudson, C. E. & Co., Leominster, Mass.
Jones, M. D. & Co., Boston, Mass.
- Hose.**
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.
- Hydrants, &c.**
McLean, John, 296 & 298 Monroe, N. Y.
- Hydraulic Forging.**
U. S. Projectile Co., Brooklyn, N. Y.
- Hydraulic Jacks.**
Dudgum, Richard, 24 Columbia, N. Y.
McCoy, Jos. F. Co., 26 Warren St., N. Y.
- Ice Breakers.**
Clement & Dunbar, Philadelphia, Pa.
Parker, Chas. Co., Meriden, Conn.
- Ice Cream Freezers.**
Clement & Dunbar, Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
Tatum, S. C. & Co., Cincinnati, Ohio.
White Mountain Freezer Co., Nashua, N. H.
- Injectors.**
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York.
Sherwood Mfg. Co., Buffalo, N. Y.
- Insurance, Boiler.**
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.
- Iron and Steel, Swedish.**
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y.
- Iron Commission Brokers.**
Butze, Adolph, St. Louis, Mo.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Barclay W. & Co., Phila.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia, Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Wister, L. R. & Co., Phila., Pa.
- Iron Ore.**
Samuel, Frank, Philadelphia, Pa.
- Iron, Merchants.**
Barns, C. K. & Co., Philadelphia, Pa.
Borden & Lovell, 70 West, N. Y.
Bussanetti & Co., Philadelphia.
Corning, Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia.
Cotton, Barclay W. & Co., Phila.
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.
- Iron, Importers.**
Abbott, Wheelock & Co., N. Y. and Boston.
Lundberg, Gustaf, Boston, Mass.
- Iron Sheet, Manufacturers of.**
Cambridge Iron & Steel Co., Cambridge, Ohio.
W. Dewees Wood Co., Lim., McKeesport, Pa.
- Iron Vases.**
Walbridge & Co., Buffalo, N. Y.
- Ironwork, Ornamental.**
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
- Keys.**
Wollensak, J. F., Chicago, Ill.
- Ladders.**
Detroit Fdy. Equipment Co., Detroit, Mich.
- Lanterns.**
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Lathes.**
Dietz, Schumacher & Co., Cincinnati, O.
Draper Machine Tool Co., Worcester, Mass.
Harrington, E. Son & Co., Phila.
Johnson, Israel H., Jr. & Co., Philadelphia, Pa.
Sebastian Lathe Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Lathing, Wire.**
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Laundry Machines.**
Johnson, S. C., Racine, Wis.
- Lawn Mowers.**
Blair Mfg. Co., Springfield, Mass.
Chadborn & Coldwell Mfg. Co., Newburgh, N. Y.
Champion Mfg. Co., Richmond, Ind.
Coldwell Lawn Mower Co., Newburgh, N. Y.
Dille & Anderson, Richmond, Ind.
Dille & McGuire Mfg. Co., Richmond, Ind.
Enterprise Mfg. Co., Philadelphia, Pa.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Mast, Foos & Co., Springfield, O.
Supplee Hdw. Co., Phila., Pa.
- Lawn Rakes.**
Gibbs Mfg. Co., Canton, Ohio.
Kohler, F. E. & Co., Canton, O.
- Lawn Sprinklers.**
Blair Mfg. Co., Springfield, Mass.
Enterprise Mfg. Co., Phila., Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Gibbs Mfg. Co., Canton, Ohio.
McGowan, John H. Co., Cincinnati, O.
Portland Lawn Sprinkler Co., Portland, Me.
- Lemon Squeezers.**
Ripley Mfg. Co., Unionville, Conn.
- Letters and Figures, Metallic.**
White, A. A. & Co., Providence, R. I.
- Letters, Paper.**
Tablet & Ticket Co., Chicago, Ill.
- Levels.**
Richardson, C. F. & Son, Athol, Mass.
- Locks and Knobs, Manufacturers of.**
Delta, A. E., 87 Chambers, N. Y.
Reading Hdw. Co., Reading, Pa.
Romer & Co., Newark, N. J.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Yale & Towne Mfg. Co., Stamford, Conn.
- Lubricants.**
Dixon, Jos., Crucible Co., Jersey City, N. J.
- Machinery.**
Am. Tool Works, Cleveland, Ohio.
Ayer, H. C. & Gleason Co., Phila., Pa.
Barnes, W. F. & John Rockford, Ill.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Deu, N. Y.
Bisnal & Keeler Mfg. Co., St. Louis.
Bliss, E. W. Co., Brooklyn, N. Y.
Bridgeport Mch. Tool Works, Bridgeport, Conn.
Briggs, Marvin, 12 Broadway, N. Y.
Bunn's Sons, Thos., Allegheny, Pa.
Clapp, Geo. M., agt., 74 Cortlandt, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Dietz, Schumacher & Co., Cincinnati, Ohio.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila., Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Howard & Morse, 46 Fulton St., N. Y.
Hulbert-Rogers Mch. Co., South Sudbury, Mass.
Johnson, Israel H., Jr. & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
Lodge & Davis Mch. Tool Co., Cincinnati, O.
Lodge & Shipley Mch. Tool Co., Cincinnati, O.
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Mechanists' Supply Co., Rochester, N. Y.
Manville, E. J., Mch. Co., Waterbury, Conn.
Newark Mch. Tool Wks., Newark, N. J.
New Haven Mfg. Co., New Haven, Ct.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks., 138 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

- Place, Geo., 120 Broadway, N. Y.
 Poole, Robt. & Son Co., Baltimore, Md.
 Powell Planer Co., Worcester, Mass.
 Pratt & Whitney Co., Hartford, Conn.
 Prentiss Tool & Supply Co., N. Y.
 Scranton Supply & Mchry. Co., Scranton, Pa.
 Sellers, Wm. & Co., Phila.
 Seyfert's Sons, L. F., Philadelphia, Pa.
 Steptoe, J. & Co., Cincinnati, O.
 Stow Flexible Shaft Co., Ltd., Phila.
 Toomey, Frank, Philadelphia, Pa.
 Wetherill, Robert & Co., Chester, Pa.
 Wickes Bros., Saginaw, Mich.
 Wilson, W. A., Rochester, N. Y.
- Machinery for Hardware Manufacturers.**
 Adt, Jno. & Son, New Haven, Conn.
- Machine Knives.**
 Loring, Coes & Co., Worcester, Mass.
 Loyd, John, 558-562 Water St., N. Y.
 Simonds Mfg. Co., Fitchburg, Mass.
 New Britain Hdw. Mfg. Co., New Britain, Conn.
- Machine Tools.—See Machinery.**
- Machine Work.**
 Papping, J., 55th St. & 11th Ave., N. Y. City.
- Machinists' Scales.**
 Coffin & Leighton, Worcester, N. Y.
 Starrett, L. S., Holy, Mass.
- Machinists' Tools and Supplies.**
 King, J. M. & Co., Waterford, N. Y.
 Sellers, Wm. & Co., Inc., Phila.
- Mallets.**
 N. Y. Mallet & Handle Works, N. Y.
- Mangles.**
 Johnson, S. C., Racine, Wis.
- Manufacturing Mfcs.**
 Illinois Central R. R., Chicago, Ill.
- Meat Choppers.**
 Clauss Shear Co., Fremont, Ohio.
- Measuring Tapes.**
 Keuffel & Esser Co., N. Y.
 Lufkin Rule Co., Saginaw, Mich.
- Mechanical Instruction.**
 Correspondence School of Mechanics, Scranton, Pa.
- Metals.**
 Pearing, Wm. S., 100 Chambers, N. Y.
 Hendricks Bros., 49 Cliff, N. Y.
- Metal Brokers.**
 American Metal Co., N. Y.
- Metallic Coatings.**
 Penn Iron Roofing & Corrugating Co., Phila., Pa.
- Metallurgists.**
 Britton, J. Blodgett, Phila., Pa.
- Milk Can Trimmings.**
 Shepard, Sidney & Co., Buffalo, N. Y.
- Mining Knives.**
 Palmer Hdw. Mfg. Co., Troy, N. Y.
- Mine Lamps.**
 Darby, Edw. & Sons, Phila., Pa.
 Leonard, B. E., Scranton, Pa.
- Mining Screens.**
 Harrington & King Perforating Co., Chicago, Ill.
 Howard & Morse, 45 Fulton, N. Y.
- Models, Makers of.**
 Franklin, H. H. Mfg. Co., Syracuse, N. Y.
 Ideal Machine Works, Hartford, Conn.
 Rhodes, L. E. Co., Hartford, Conn.
- Molding Sand.**
 Obermayer, S. Co., Cincinnati, O.
- Money Drawers.**
 Waddell Wooden Ware Wks., Greenfield, Ohio.
 Sun Mfg. Co., Greenfield, Ohio.
- Motors, Water and Electric.**
 C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
 Dallett, Thomas H. & Co., Phila., Pa.
- Nail Keg Stock.**
 Crescent Mfg. Co., Detroit, Mich.
- Nail Machinery.**
 Pittsburgh Mfg. Co., Pittsburgh, Pa.
- Nail and Tack Pullers.**
 Graham, John H. & Co., 111 Chambers Street, N. Y.
 Scranton & Co., New Haven, Conn.
 Specialty Mfg. Co., Hartford, Conn.
- Nails (Cut) and Spikes.**
 Borden & Lovell, 70 West, N. Y.
 Cumberland Nail & Iron Co., Phila.
 Pottstown Iron Co., Pottstown, Pa.
 Riverside Iron Wks., Wheeling, W. Va.
- Nickel Platers' Supplies.**
 Hanson & Van Winkle Co., Newark, N. J.
 Zucker & Levett Chemical Co., 10 to 14 Grand St., N. Y.
- Norway Shapes, Rollers of.**
 Rowland, William & Harvey, Frankford, Philadelphia.
- Novelty Manufacturers.**
 Franklin, H. H. Mfg., Syracuse, N. Y.
 Ideal Machine Works, Hartford, Conn.
- Nut Machines.**
 Dunham Nut Co., Unionville, Ct.
- Nuts, Bolts, &c., Makers of.**
 American Bolt Co., Lowell, Mass.
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Dunham Nut Co., Unionville, Conn.
 Haskell, Wm. H. Co., Pawtucket, R. I.
 Mt. Carmel Bolt Co., Mt. Carmel, Conn.
 Pennsylvania Bolt & Nut Co., Lebanon, Pa.
 Port Chester Bolt & Nut Co., Port Chester, N. Y.
 Russell, Burdall & Ward, Port Chester, N. Y.
 Sternbergh, J. H. & Son, Reading, Pa.
 Wilson, J. Fred., Worcester, Mass.
 Wm. H. Haskell Co., Pawtucket, R. I.
- Oil Cups and Lubricators.**
 Sherwood Mfg. Co., Buffalo, N. Y.
- Oilers.**
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Oil Stones.**
 Pike Mfg. Co., Pike Station, N. H.
- Orange Shears.**
 Henry, J. T. Mfg. Co., Hamden, Conn.
- Ores.**
 Wister, Francis, Philadelphia, Pa.
- Ox Bow Pins.**
 Sawyer, O. C., Sharon, Vt.
- Ox Shoes.**
 Scranton Forging Co., Scranton, Pa.
- Packing.**
 Morrison, Robert, St. Louis, Mo.
 N. Y. Belting & Packing Co., Ltd., N. Y.
- Nadlocks.**
 Ames Sword Co., Chicopee, Mass.
 Fraim, E. T., Lancaster, Pa.
 Wolf, W. & L., Phila., Pa.
 Shultz Mfg. Co., Phila., Pa.
- Paint Burners.**
 Dangler Stove & Mfg. Co., Cleveland, Ohio.
- Paint Cans.**
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Pants Stretcher.**
 Covert Mfg. Co., West Troy, N. Y.
- Patent Solicitors.**
 Butler, C. N., Phila., Pa.
 Howson & Howson, Philadelphia and Washington.
 Jenner, H. W. T., Washington, D. C.
 Stocking, E. B., Washington, D. C.
- Peanut and Coffee Roaster.**
 Olsen, A. B., Kansas City, Mo.
- Perforated Metal.**
 Clinton Wire Cloth Co., Clinton, Mass.
 Harrington & King Perforating Co., Chicago, Ill.
 Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Phosphor Bronze.**
 Phosphor Bronze Smelting Co., Limited, Philadelphia.
- Phosphor Tin.**
 Crescent Phosphorized Metal Co., Philadelphia, Pa.
 Halk & Naumann, 516 Pearl, N. Y.
- Picks and Mattocks.**
 Plumb, Fayette R., Philadelphia, Pa.
- Pig Iron.**
 Houston, C. B. & Co., Philadelphia, Pa.
 Montour Iron & Steel Co., Danville, Pa.
 Naylor & Co., 45 Wall, N. Y.
 Pilling & Crane, Philadelphia, Pa.
 Samuel, Frank, Philadelphia, Pa.
- Pig Iron Storage.**
 Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.
- Pile Drivers.**
 Vulcan Iron Works, Chicago, Ill.
- Pipe Rent.**
 National Pipe Bending Co., New Haven, Conn.
- Pipe Cutting and Threading Machines.**
 Armstrong Mfg. Co., Bridgeport, Conn.
 Bignall & Keeler Mfg. Co., St. Louis, Mo.
 Detrick & Harvey Mch. Co., Baltimore, Md.
 Merrill Mfg. Co., Toledo, O.
 Pancoast, Henry B. & Co., Phila.
 Saunderson's Sons, D., Yonkers, N. Y.
 Walworth Mfg. Co., Boston, Mass.
- Pipe Grips.**
 Prentiss Vise Co., 44 Barclay, N. Y.
- Pipes, Fittings, &c., Makers of.**
 McNab & Harlin Mfg. Co., N. Y.
- Pipe, Water and Gas, Makers of.**
 Cumberland Nail & Iron Co., Phila., Pa.
 Donaldson Iron Co., Emaus, Pa.
 Riverside Iron Works, Wheeling, W. Va.
 Wood, R. D. & Co., Philadelphia, Pa.
- Plane Irons, Manufacturers of.**
 Buck Bros., Millbury, Mass.
 Buck, Chas., Millbury, Mass.
- Planers.**
 Detrick & Harvey Mch. Co., Baltimore, Md.
- Planer, Planer Co., Worcester, Mass.**
 Wilson, W. A., Worcester, Mass.
- Planes, Manufacturers of.**
 Stanley Rule & Level Co., N. Y.
- Planter and Hoe.**
 Ayers, J. R., Petersburg, Va.
- Plated Ware.**
 Boardman, J. & Son, New Haddam, Ct.
 Holmes & Edwards Silver Co., Bridgeport, Conn.
 Kelley & McBean, Niagara Falls, N. Y.
 Rogers, Wm. Mfg. Co., Hartford, Ct.
- Plate, Iron and Steel, Mfrs. of.**
 Etna-Standard Iron & Steel Co., Bridgeport, O.
 Lukens Iron & Steel Co., Coatesville, Pa.
 Mahoning Valley Iron Co., Youngstown, Ohio.
 Moorhead-McLean Co., Pittsburgh, Pa.
 McIlvain & Sons, Reading, Pa.
 Pottstown Iron Co., Pottstown, Pa.
 Pottsville Iron & Steel Co., Pottsville, Pa.
 Singer, Nimick & Co., Pittsburgh, Pa.
 The Mahoning Valley Iron Co., Youngstown, O.
 Wellman Iron & Steel Co., Thurflow, Pa.
 Wood, Alan Co., Philadelphia.
- Plating, Nickel, Brass and Silver.**
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Pokes.**
 Bishop, A. W., Berea, Ohio.
- Polishing Machines.**
 Watson & Stillman, 201 E. 43d, N. Y.
- Post Hole Diggers.**
 Buckeye Mfg. Co., Union City, Ind.
 Gibbs Mfg. Co., Canton, Ohio.
 Wister, L. & R. & Co., Phila., Pa.
- Poultry Nettings.**
 Barnum, E. T., Detroit, Mich.
 Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
- N. J. Wire Cloth Co., Trenton, N. J., "Silver Finish."**
 Tyler Wire Works Co., W. S., Cleveland, O.
 Wright & Colton Wire Cloth Co., Worcester, Mass.
- Powder.**
 Laffin & Rand Powder Co., 29 Murray, New York Powder Co., 62 Liberty St., N. Y.
- Power Hack Saws.**
 Millers Falls Co., 83 Reade St., N. Y.
- Power Hammers.**
 Dienelt & Eisenhardt, Philadelphia.
 Dupont Mfg. Co., St. Johnsbury, Vt.
 Jenkins & Linzie, Bellefonte, Pa.
 Long & Alstatter Co., Hamilton, Ohio.
 Scranton & Co., New Haven, Conn.
- Power Transmitting Machinery.**
 Dodge Mfg. Co., Mishawaka, Ind.
- Presses, Dies, &c.**
 E. W. Bliss Co., Brooklyn, N. Y.
 Crosby, G. A. & Co., Chicago, Ill.
 Ferracute Mch. Co., Bridgeton, N. J.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Stiles & Parker Press Co., Brooklyn, N. Y.
 Waterbury Mch. Co., Waterbury, Ct.
- Presses, Power, Makers of.**
 Bliss, E. W. Co., Brooklyn, N. Y.
 Manville, E. J. Mch. Co., Waterbury, Ct.
 Merriman, A. H., Meriden, Conn.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
- Pruners.**
 Toplift & Ely Co., Elyria, Ohio.
- Pulleys.**
 Brown, A. & F., 17 Dey St., N. Y.
 Dodge Mfg. Co., Mishawaka, Ind.
 Keystone Clutch Mch. Wks., Phila., Pa.
 Lake, J. H. & D. Co., Massillon, O.
 Reeves Pulley Co., Columbus, Ind.
- Pulverizing Mills.**
 Bradley Fertilizer Co., Boston, Mass.
- Pumping Machinery.**
 Dean Bros. Steam Pump Works, Indianapolis, Ind.
 Hooker-Colville Steam Pump Co., St. Louis, Mo.
 Lucas, C. O. & Co., Greenville, Ohio.
 McGowan, J. H. & Co., Cincinnati, O.
 Maslin, J. & Son, Jersey City, N. J.
 Norwalk Iron Works Co., So. Norwalk, Conn.
 Southwark Fdy. & Mch. Co., Phila., Pa.
 Valley Pump Works, Easthampton, Mass.
 Worthington, Henry R., 86 and 88 Liberty St., N. Y.
- Pumps, Makers of.**
 Bellevue Pump Co., Bellevue, Iowa.
 Deming Co., Salem, O.
 Douglas, W. & B., Middletown, Conn.
 East, F. & Co., Springfield, O.
 Myers, F. E. & Bro., Ashland, O.
- Punches.**
 Richards, I. P., Providence, R. I.
- Punches and Shears, Hand and Power.**
 Bertsch & Co., Cambridge City, Ind.
 E. W. Bliss Co., Brooklyn, N. Y.
 Crosby, G. A. & Co., Chicago, Ill.
 Cross & Speirs Machine Co., Waterbury, Conn.
 Ferracute Mch. Co., Bridgeton, N. J.
 Henderer, A. L., Wilmington, Del.
 Long & Alstatter Co., Hamilton, Ohio.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Stiles & Parker Press Co., Brooklyn, N. Y.
 Lids & Roos Punch & Shear Co., Cincinnati, Ohio.
 Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
 Watson & Stillman, 201 E. 43d, N. Y.
- Rails, Old and New.**
 Perry, W. H. & Co., Providence, R. I.
- Rat and Mouse Traps.**
 Estey, W. S., 65 Fulton, N. Y.
 Ripley Mfg. Co., Unionville, Conn.
 Sun Mfg. Co., Greenfield, Ohio.
- Razors.**
 J. R. Torrey Razor Co., Worcester, Mass.
- Reels.**
 Hendryx, A. B. Co., New Haven, Conn.
- Refrigerator Door Fasteners.**
 Conroy, P. J. & Co., Philadelphia.
- Refrigerators.**
 Monroe Refrigerator Co., Lockland, O.
 Pierce, Geo. N. & Co., Buffalo, N. Y.
- Rivers.**
 Blake & Johnson, Waterbury, Conn.
 Boyce Rivet Co., Muncie, Ind.
 Burden Iron Co., Troy, N. Y.
 Clark & Cowles, Plainville, Conn.
 Cobb & Drew, Plymouth, Mass.
 New England Screw Co., Boston, Mass.
 Sternbergh, J. H. & Son, Reading, Pa.
 Townsend, W. P. & Co., New Brighton, Pa.
- Riveting Machines.**
 Adt, Jno. & Sons, New Haven, Conn.
- Rock Drills.**
 Band Drill Co., 23 Park Place, N. Y.
- Rolling Mill Machinery.**
 Birmingham Iron Fdry, Birmingham, Conn.
 Booth, The Lloyd Co., Youngstown, O.
 Leachway Foundry & Mch. Co., Pittsburgh, Pa.
 Morgan Construction Co., Worcester, Mass.
 Robinson-Rea Mfg. Co., Pittsburgh.
 Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
 Trethewey Mfg. Co., Pittsburgh, Pa.
 Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
- Rolls, Chilled, Sand and Steel.**
 Birmingham Iron Foundry, Birmingham, Conn.
 Booth, The Lloyd Co., Youngstown, O.
- East Chicago Fdy Co., Chicago, Ill.**
 Garrison, A. Fdy. Co., Pittsburgh, Pa.
 Robinson-Rea Mfg. Co., Pittsburgh, Pa.
 Seaman, Steeth & Black, Pittsburgh.
 Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
- Roofing.**
 Cambridge Roofing Co., Cambridge, O.
 Cincinnati Corrugating Co., Piqua, O.
 Kanenberg Roofing Co., Canton, O.
 N. Y. Iron Roofing & Corrugating Co., Jersey City, N. J.
- Rope and Web Goods.**
 Covert Mfg. Co., West Troy, N. Y.
 Covert's Saddlery Wks., Farmer, N. Y.
- Rope Wheels.**
 Cresson, Geo. V. Co., Philadelphia, Pa.
- Rubber Goods.**
 Canfield, H. O., Bridgeport, Conn.
- Rules, Manufacturers of.**
 Keuffel & Esser Co., New York.
 Lufkin Rule Co., Saginaw, Mich.
 Stanley Rule & Level Co., 29 Chambers.
- Rust Preventive.**
 Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
- Sample Holder.**
 Massey & Thompson, Monroe City, Mo.
- Sand Paper.**
 Baeder, Adamson & Co., Phila., Pa.
- Sash Balances.**
 Caldwell Mfg. Co., Rochester, N. Y.
 Pullman Sash Balance Co., Rochester, N. Y.
 Stearns, E. C. & Co., Syracuse, N. Y.
- Sash Cords and Chains.**
 Morton, Thos., 65 Elizabeth, N. Y.
 Ossawan Mills Co., Norwich, Conn.
 Samson Cordage Works, Boston, Mass.
 Smith & Egge Mfg. Co., Bridgeport.
- Sash Fasteners.**
 Wooster, F. V., Boston, Mass.
- Sash Locks.**
 Columbian Sash & Door Lock Co., Wauseon, Ohio.
 Ives, H. B. & Co., New Haven, Conn.
- Sash Pulleys.**
 Palmer Hardware Mfg. Co., Troy, N. Y.
- Sash Weights.**
 Brown, E. & Co., Philadelphia, Pa.
 Norton Bros., Chicago, Ill.
- Saw Filing Machines.**
 Disston, Henry & Sons, Philadelphia, Pa.
- Saws, Makers of.**
 Butler Mfg. Co., Boston, Mass.
 Disston, Henry & Sons, Phila., Pa.
 National Saw Co., 98 Reade St., N. Y.
 Simonds Mfg. Co., Fitchburg, Mass.
- Saw Vises.**
 Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Saw Sets.**
 Taintor Mfg. Co., 84-86 Chambers, N. Y.
- Scales, Manufacturers of.**
 Buffalo Scale Co., Buffalo, N. Y.
 Chatillon, John & Sons, 85-89 Cliff, N. Y.
- Scrapers, Road.**
 Am. Steel Scraper Co., Sydney, Ohio.
 Kilbourne & Jacobs Mfg. Co., Columbus, O.
 Sidney Steel Scraper Co., Sidney, O.
- Screens, Coal and Ore.**
 Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Screens, Door and Window.**
 Hoeber Screen Door Co., Detroit, Mich.
 White, Van Gahn & Co., 15-17 Chatham Sq., N. Y.
 Phillips, A. J. & Co., Fenton, Mich.
- Screw Cutting Machinery.**
 Wells Bros. & Co., Greenfield, Mass.
 Wiley & Russell Mfg. Co., Greenfield, Mass.
- Screw Drivers.**
 Brown, R. H. & Co., New Haven, Conn.
 Gay & Parsons, Mayhew, H. H. Co., Shelburne Falls, Mass.
- Screw Plate and Pipe Cutter.**
 Jarecki Mfg. Co., Erie, Pa.
- Screws, Makers of.**
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Wm. H. Haskell Co., Pawtucket.
 Miles, F. S., 205 Quarry, Philadelphia.
 New England Screw Co., Boston, Mass.
 Reynolds & Co., New Haven, Conn.
 Worcester Machine Screw Co., Worcester, Mass.
- Scroll Saws.**
 Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Seythe Stones and Whetstones.**
 Pike Mfg. Co., Pike Station, N. H.
 Cleveland Stone Co., Cleveland, O.
- Shafting, Makers of.**
 Brown, A. & F., 17 Dey St., N. Y.
 Cresson, Geo. V. Co., Philadelphia, Pa.
 Fairmount Mch. Co., Philadelphia, Pa.
 Fitzsimons & Co., Cleveland, Ohio.
 Sellers, Wm. & Co., Inc., Phila., Pa.
 Stow Mfg. Co., Binghamton, N. Y.
- Shaft Support.**
 Decatur Shaft Support Co., Decatur, Ill.
- Shaped Iron and Steel, Manufacturers of.**
 Etna-Standard Iron & Steel Co., Bridgeport, O.
 East Chicago Fdy Co., Chicago, Ill.

- Allentown Rolling Mill, Allentown, Pa.**
Lockhart Iron & Steel Co., Pittsburgh, Pa.
- Passaic Rolling Mill Co., Paterson, N.J.**
Pottsville Iron & Steel Co., Pottsville, Pa.
- Roberts, A. & P. & Co., Phila., Pa.**
The Phoenix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.
- Shears and Scissors.**
Acme Shear Co., Bridgeport, Conn.
Heinrichs, R. Sons Co., Newark, N. J.
- Sheet Iron and Steel, Manufacturers of.**
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Morehead-McCleane Co., Pittsburgh.
Pierson & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., Ltd., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.
- Sheet Zinc.**
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
- Sinks.**
Douglas, W. & B., Middletown, Conn.
- Skates, Ice.**
Lovell, Jno. P. Arms Co., Boston, Mass.
Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.
- Skates, Roller.**
Henley, M. C., Richmond, Ind.
Union Hardware Co., Torrington, Ct.
Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.
- Smelting Works.**
Reeves, Paul S., 760 S. Broad, Phila.
- Soldering Coppers.**
Clendenin Bros., Baltimore, Md.
Covert Mfg. Co., West Troy, N. Y.
- Speaking Tubes.**
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.
- Specialties, Pat. Articles.**
Rhodes, L. E. Co., Hartford, Conn.
- Spelter.**
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
Missouri Metal Co., St. Louis, Mo.
- Spoons and Forks.**
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Kelley & McBean, Niagara Falls, N. Y.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
- Sporting Goods.**
Hartley & Graham, 313-315 B'way, N. Y.
- Springs.**
Clark & Cowles, Plainville, Ct.
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Tuck Mfg. Co., Brockton, Mass.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
- Spring Hinges.**
Bommer Bros., Brooklyn, N. Y.
Fullman Sash Balance Co., Rochester, N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Hdw. Co., 14 Warren St., N. Y.
- Stamped Ware.**
Am. Stamping Co., 104 & 106 John St., New York.
- Stamping Works.**
Avery Stamping Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
- Staples.**
Cobb & Drew, Plymouth, Mass.
Titchener, E. H. & Co., Binghamton, N. Y.
- Steam Gauges.**
Bristol Co., Waterbury, Conn.
- Steam Hammers, &c., Makers of.**
Dienelt & Eisenhardt, Philadelphia.
Dugdon, Richard, 24 Columbia Street, N. Y.
Tretlow Mfg. Co., Pittsburgh, Pa.
- Steam Heating.**
Webster, Warren & Co., Camden, N. J.
- Steam Separators.**
Goubert Mfg. Co., 32 Cortlandt St., N. Y.
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden, N. J.
- Steam Specialties.**
Lunkenheimer Co., Cincinnati, O.
- Steel, Cold Rolled Strip.**
Superior Steel Co., Pittsburgh, Pa.
Wilnot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel Figures and Alphabets.**
Krogsrud, W., 61 Fulton St., N. Y.
- Steel Importers.**
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 41 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y.
Whitney, A. R. & Co., Broadway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Steel (Mushet's Special).**
Jones, E. M. & Co., Boston.
- Steel Manufacturers.**
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Baker, Hermann & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 41 John, N. Y.
Kaiser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorhead-McCleane Co., Pittsburgh, Pa.
Moss, F. W., 83 John, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Boylan, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Superior Steel Co., Pittsburgh, Pa.
Wordlaw, S. C., Sheffield, Eng.
Wetherell Bros., 93 Liberty, N. Y.
Wilnot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel, Manufacturers' Agents.**
Barns, C. K. & Co., Philadelphia, Pa.
Butze, Adolph, St. Louis, Mo.
Corning, Edw. & Co., 29 B'way, N. Y.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.
- Steel Rails, Manufacturers of.**
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville, Pa.
Riverside Iron Wks., Wheeling, W. Va.
- Steel, Tool.**
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 41 John, N. Y.
Jones, E. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
- Step Ladders, Rolling.**
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Croissant, M., Albany, N. Y.
Morley Bros., Saginaw, Mich.
- Stocks and Dies.**
Armstrong Mfg. Co., Bridgeport, Conn.
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Stove Linings.**
Ostrander Fire Brick Co., Troy, N. Y.
- Stove Pipe Thimbles.**
Cheasey, S. & Son, Manlius, N. Y.
- Stove Trucks.**
Gwinner Mfg. Co., Hamilton, Ohio.
- Street Lamps.**
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Strops.**
J. R. Torrey & Co., Worcester, Mass.
- Structural Iron Work.**
Lindsay, Jas. G. & Co., Phila., Pa.
- Sulphuric Acid.**
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
- Tacks, Brads, Staples, &c.**
Atlas Tack Corporation, Boston, Mass.
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
- Taps and Dies.**
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Testing Laboratories.**
Riehle Bros. Testing Mach. Co., Philadelphia.
- Testing Machines.**
Riehle Bros. Testing Mach. Co., Phila.
- Theatrical Hardware.**
Wollensak, J. F., Chicago, Ill.
- Thill Springs.**
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.
- Timber and Mineral Lands.**
Robertson, E. Co., Cincinnati, O.
- Time Record.**
Scattergood, H. W., Phila., Pa.
- Tinning Process.**
Sands, Thos., Nashua, N. H.
- Tin Plate Machinery.**
Lloyd Booth Co., Youngstown, Ohio.
- Tinware.**
Am. Stamping Co., 104 & 106 John St.
- Tire Upsetters.**
Butts & Ordway, Boston, Mass.
- Toe Calks, Steel.**
Burke, P. F., Boston, Mass.
- Tool Blocks.**
Hulbut-Rogers Mch. Co., South Sudbury, Mass.
- Tool Chests.**
Am. Tool Co., 200 W. Houston St., N. Y.
- Tool Holders.**
Armstrong Bros. Tool Co., Chicago, Ill.
- Tools.**
Brown, R. H. & Co., New Haven, Conn.
Fray, Jno. S. & Co., Bridgeport, Conn.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.
Tower & Lyon, 45 Chambers St., N. Y.
Wilkinson, A. J. & Co., Boston, Mass.
- Tools, Blacksmith and Wheelwright.**
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway, Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Favette R., Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Tools, Steam and Gas Fitters'.**
Saunders' Sons, D., Yonkers, N. Y.
- Torches, Oil and Gasoline.**
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.
- Transom Litters.**
Wollensak, J. F., Chicago, Ill.
- Tricycles.**
Toledo Metal Wheel Co., Toledo, Ohio.
- Trucks, Manufacturers of.**
Clark, G. P., Windsor Locks, Conn.
- Tubes, Seamless Drawn Copper.**
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.
- Tubes, Steel.**
Leng's, John S. Son & Co., 4 Fletcher St., New York.
Shelby Steel Tube Co., Shelby, Ohio.
U. S. Projectile Co., Brooklyn, N. Y.
- Tumbling Barrels.**
Henderson Bros., Waterbury, Conn.
- Turnbuckles.**
Central Iron & Steel Co., Brazil, Ind.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.
- Twist Drills, Makers of.**
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.
- Valves, Gas, Water and Steam.**
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John, N. Y.
- Ventilating Fans.**
Huyett & Smith Mfg. Co., Detroit, Mich.
- Ventilator Appliances.**
Howard & Morse, 45 Fulton St., N. Y.
- Vise Jaws.**
Newark Mch. Tool Co., Newark, N. J.
- Vises.**
Athol Machine Co., Athol, Mass.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y.
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay, N. Y.
Tower & Lyon, 95 Chambers St., N. Y.
- Wagon Jacks.**
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y.
- Wagon Poles.**
Hartzell, Geo. W., Greenville, Ohio.
- Washboards.**
Olds Washboard Wks., Ft. Wayne, Ind.
- Washers.**
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.
- Washing Machines.**
Diether & Barrows, Ft. Wayne, Ind.
Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.
- Water Meters.**
Worthington, Henry R., 80 & 88 Liberty St., N. Y.
- Water Wheels.**
Poolie, Robt. & Son Co., Baltimore, Md.
- Wheelbarrows.**
Amer. Steel Scraper Co., Sidney, Ohio.
Ryan Mfg. Co., Hyran, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Sidney Steel Scraper Co., Sidney, O.
Toledo Wheelbarrow Wks., Toledo, O.
- Wheels.**
Arnold Metal Wheel Co., New London, Ohio.
- Window Cleaners.**
Bourke Mfg. Co., Youngstown, O.
- Window Cord, Makers of.**
Samson Cordage Works, Boston, Mass.
- Wire, Manufacturers of.**
American Wire Co., Cleveland, Ohio.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester.
Wetherell Bros., 93 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Wire Cloth.**
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff, N. Y.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.
- Wire Cutters.**
King, J. M. & Co., Watertown, N. Y.
- Wire Dies.**
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John St., N. Y.
- Wire Fences, See Fencing, Iron and Wire.**
- Wire Fence Tightener.**
Schriver, O. P. & Co., Cincinnati, O.
- Wire Goods, Manufacturers of.**
Bromwell Brush & Wire Goods Co., Cincinnati, Ohio.
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossavan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Williamson, C. T., Wire Novelty Co., Newark, N. J.
Wire Goods Co., Worcester, Mass.
- Wire Machinery.**
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester, Mass.
Waterbury Mch. Co., Waterbury, Conn.
- Wire Straightening and Cutting Machinery.**
Adt, John & Son, New Haven, Conn.
- Wire Nails.**
Bond Nail Co., Raynham, Mass.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
Phillips, Townsend & Co., Phila., Pa.
Salem Wire Nail Co., Salem, O.
Taunton Wire Nail Co., Taunton, Mass.
Whitney, A. R. & Co., New York City.
- Wire Rods, Steel.**
American Wire Co., Cleveland, Ohio.
New Castle Wire Nail Co., New Castle, Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Wire Rope, Iron and Steel, Makers.**
Broderick & Bascomb Rope Co., St. Louis, Mo.
California Wire Works, San Francisco.
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester, Mass.
Williamsport Wire Rope Co., Williamsport, Pa.
- Wire Rope Machinery.**
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Malin & Co., Cleveland, O.
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Egan Co., Cincinnati, Ohio.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
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- Wrenches, Manufacturers of.**
Bemis & Call Hardware & Tool Co., Springfield, Mass.
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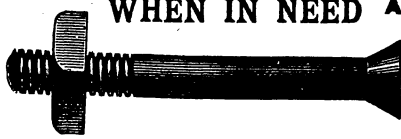
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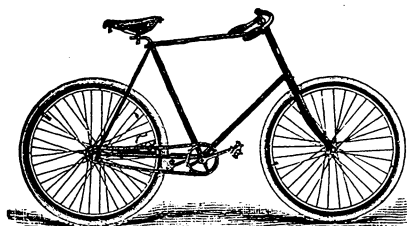
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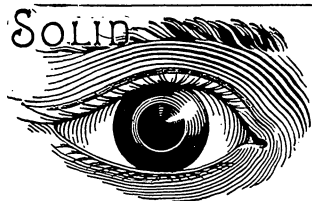
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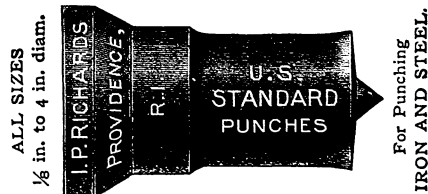


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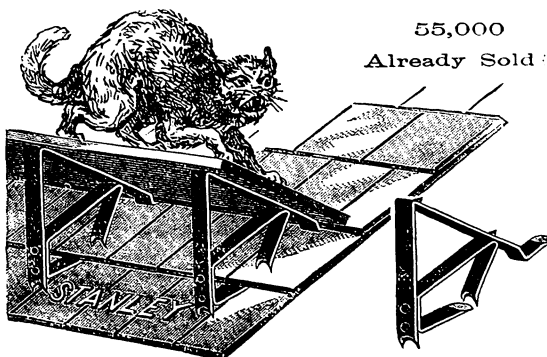
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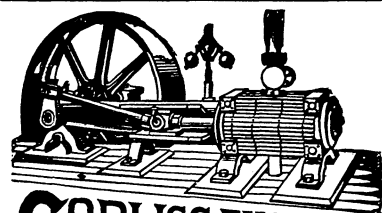
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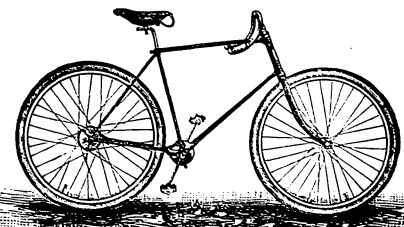
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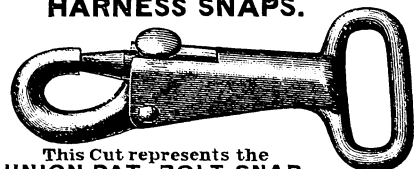
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The New Porter Steam Engine.

A departure in steam engineering for which claims of the broadest description are made is marked by letters patent issued recently to Charles T. Porter of Montclair, N. J. The great work Mr. Porter has performed in the development of the steam engine entitles any design emanating from him to the

From the patent specifications we take the following: The object of the invention is to give a practical solution to the problem, "How shall a perfect expansion diagram be produced by a steam engine, running at any desired speed, with a single valve of moderate size having positive movements, working in equilibrium and so adapted to work without resistance under any desired pressure, making only one opening for admission and one opening for release of steam, and with a very small

nomical is one-fifth the stroke. 2. It opens a width of port about two and a half times greater than is opened by an eccentric of the same throw, and cutting off at the same point, the velocity of the opening and closing movements being increased in about the same ratio. 3. It delays the release of steam if neither exhaust lap nor lead be given to the valve until eleven-twelfths of the stroke, thus permitting the expansion to continue practically to the end of the stroke, and it closes the ex-

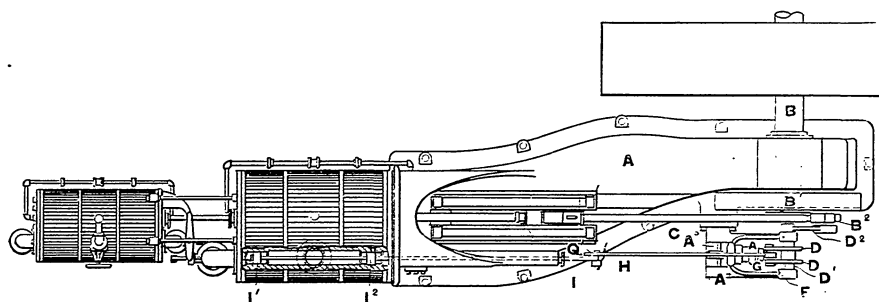


Fig. 3.—Plan View of Tandem Compound Engine.

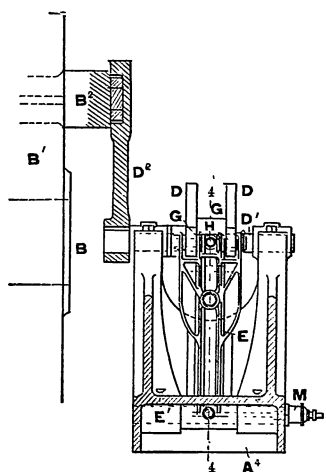


Fig. 5.—Sectional End Elevation of Fig. 4.

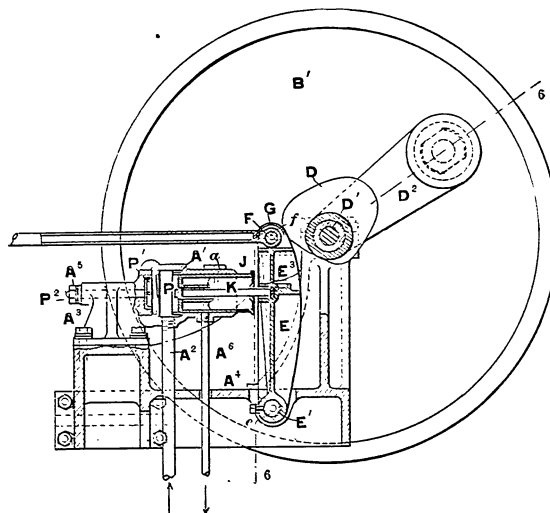


Fig. 4.—Sectional Side Elevation of Cam and Connected Parts.

THE NEW PORTER STEAM ENGINE.

most careful consideration. In 1870 a Porter-Allen engine was exhibited at the American Institute Fair, New York, which was severely criticised, mainly, it would seem, because it strayed from the beaten path of custom in almost every detail. The workmanship was the best possible; scraped surfaces were employed, the pins were hardened and ground; the piston speed was, for those times, tremendous; above all, the design was radically different from any before seen. Notwithstanding prophecies of failure this engine met, or rather created, a demand for its type, and its good points were quickly appreciated and its reputation established. The part Mr. Porter took in designing that engine and the part he has since taken in bringing the steam engine a step nearer perfection insures for his new design respectful attention.

percentage of space added to the piston displacement for clearance and port?" In other words, "How with a simple construction shall all the well-known causes of waste be avoided and the equally well-known economic features be realized in the steam engine?" The objection presents itself at once that with an equilibrium valve which cannot be lifted from its seat large waste room in clearance and port is a necessity to prevent breakdown from water in the cylinder. This objection is removed by a construction of cylinder and arrangement of steam pipe which are described later. Instead of an eccentric being employed to actuate the valve, a cam is used which possesses the following features:

1. It cuts off the steam at a fixed point in the early part of the stroke. The point selected as being most eco-

nomical is one-fifth the stroke. 2. It opens a width of port about two and a half times greater than is opened by an eccentric of the same throw, and cutting off at the same point, the velocity of the opening and closing movements being increased in about the same ratio. 3. It delays the release of steam if neither exhaust lap nor lead be given to the valve until eleven-twelfths of the stroke, thus permitting the expansion to continue practically to the end of the stroke, and it closes the ex-

can easily be maintained between the cam and the actuated parts. 6. It permits the employment of piston valves of moderate size, so as to require, for proper admission and release of the steam, with a piston travel of 600 feet per minute and ordinary length of stroke, only an addition of about 2 per cent. to the piston displacement for clearance and port. 7. It exhibits the advantages, in simplicity of construction and operation, in closeness of regulation and in economy of steam which with suitable construction are attainable by the system of cutting off at an early fixed point in the stroke and regulating the speed of the engine by throttling the steam, when already dry.

As in order to produce these results different movements must be imparted to the valve on the opposite strokes, the cam cannot be made of a form capable of working in a yoke, and at high speed such a construction would be inadmissible, on account of the inevitable lost motion and shock on each reversal. The style of cam shown in Fig. 1 has been selected as being free from all practical objections. It works against a roller which is held in contact by the pressure of the steam. In a single crank engine the location of the cam outside the crank, as here shown, possesses controlling advantages. It can be made small, and is very accessible, the connection to the valve is direct, the solidity of the engine bed is not impaired by the requirements of this connection, the shaft may be shortened, and, except to supply oil to the outer bearing, the engineer has no occasion to go on the belt and fly wheel side of the engine for any purpose. As a construction which seems on several accounts to be preferable, two identical cams are employed, working against two identical rollers, one on either side of the cam rod, by which motion is communicated to the valve. These are in effect one cam. One pin serves as a bearing pin for the rollers and a joint pin for the cam rod. This pin is supported securely in the vibrating end of a lever, which is pivoted at its opposite end, and is of such length relatively to the throw of the cam that the angular vibration of the rod shall be trifling. This lever, in addition to carrying the rollers and cam rod, and determining their position, performs two other important functions. It acts as the medium through which the elastic pressure of the steam or other fluid employed is applied to the rollers to hold them in contact with the face of the cam, and through which also the rollers and cam receive their lubrication. The cam shaft is supported in line with the main shaft of the engine, the lever and the cylinder in which the elastic pressure is exerted on a single bracket, which is firmly bolted to the main framing or bed plate of the engine, by which means the relations between these parts are effectually preserved. At the end of the cam rod nearest the cylinder is provided a light and simple but secure disengaging hook, which enables the engine to be started from any position except on the dead centers, and to be run forward or backward by hand, by means of the starting bar inserted in the end of the lever. The valve is formed of two connecting pistons, one located at each end of the cylinder, and, except in small engines, two such valves arranged side by side and connected through their stems and moving together as one valve are provided. In compound engines the cam permits the cut off at one-fifth of the stroke in each

cylinder. The area of these cylinders can be proportioned as one to five, and so obtain 25 expansions of the steam.

Detailed Description.

The shaft is shown at B, the crank at B' and the crank pin at B² of Fig. 3. C is the connecting rod leading from the cross head, and through which are transmitted the strong alternate thrust-

main crank pin so as to be revolved with the shaft B. The arm D³ should not be connected with absolute rigidity to the crank pin. Its junction with the cam shaft D' should be absolutely firm, and its connection to the crank pin B² should have a little liberty to come and go, to compensate for the possibility of the shafts B and D' being slightly out of line.

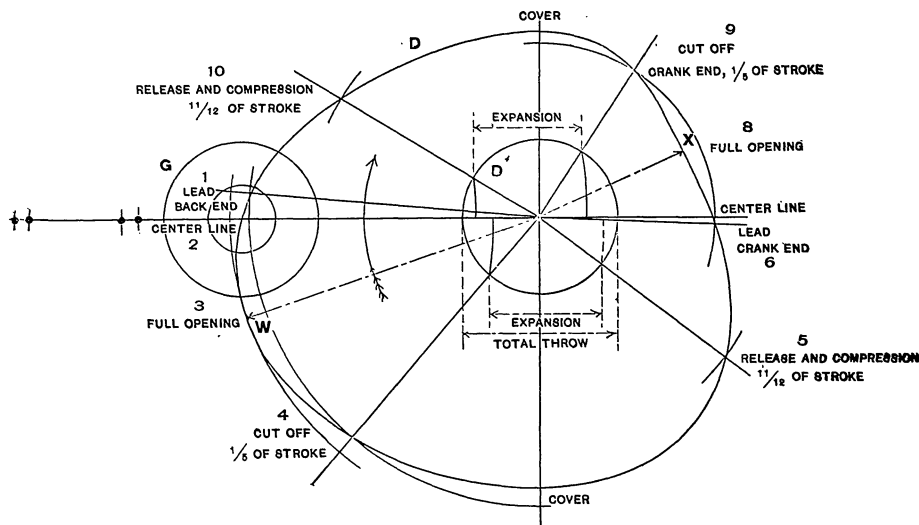


Fig. 1.—Outline of the Cam.

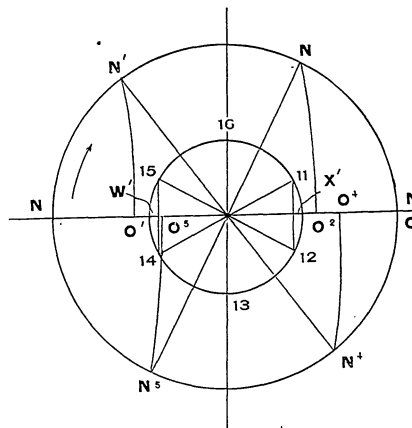


Fig. 2.—Diagram Showing Action of a Corresponding Eccentric.

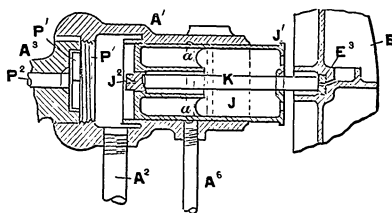


Fig. 6.—Enlarged View of Cylinder A' of Fig. 5.

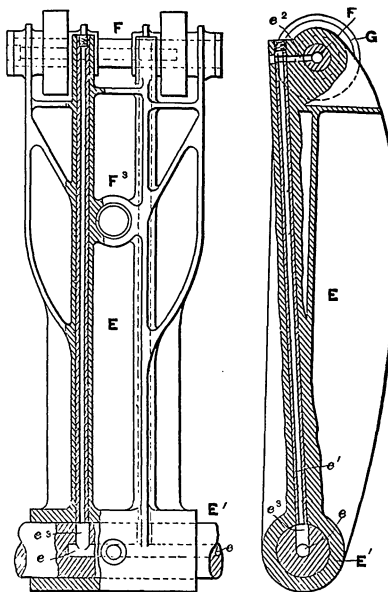


Fig. 7.—Sectional Views of Arm E of Fig. 4.

THE NEW PORTER STEAM ENGINE.

ing and pulling forces due to the action of the steam on the piston.

D, in Figs. 4 and 5, is a double cam carried on the cam shaft D' in line with the shaft B, and having the form which enables it to perform all the functions which have been described by imparting movements to the valve in one direction and limiting the movements imparted to it by the constant counter-acting force in the opposite direction. It is connected by a lever, D², to the

E (enlarged in Fig. 7) is a lever actuated by the cam, and transmitting its motion to the valve. It turns on a center at E'. The contact with the cam is effected through the roller G. The motion is communicated to the cam rod or link H through the joint pin F, which serves also as the bearing pin for the rollers G. This link H is formed with a hook, h, which engages with a pin, L², carried in an idle lever, L, turning on a fixed center, L'.

Q is a rod adapted to move endwise in the link H, and with a handle or knob, Q', on its outer end by which it may be grasped and either lifted or moved endwise, or both, as required.

pin L². So long as the parts are allowed to remain thus engaged the motion of the rollers G is communicated to the valves. When in starting or at any other period it is required to work

handle, L², Fig 10, being inserted in a socket in the upper end of the lever L, that lever may be moved at will, to shift the valve rod and the attached valves I, I² into any required positions to turn the engine forward or backward. When it is desired to again engage the parts the knob Q' is again pulled to draw the pin Q out of the notch h and that notch is again engaged with the pin L', and the pin Q is again allowed to move endwise by the force of the spring Q³ and lock the notch h into engagement.

A', Figs. 3 and 6, is a cylinder fixed on the bed A, and in communication through the pipe A² with the steam boiler, not shown. This cylinder is truly bored and receives a deep hollow piston, J, having its open end partially covered and flanged, as shown by J'. The center of the bottom of the piston is formed by a removable plug, J², tapped into place and having its inner end finished concave.

K is a thrust connection or toggle, serving as a connecting rod for this piston, one rounded end bearing against the plug J², and the other end, also rounded, bearing in a correspondingly finished concave box, E³, held in a pocket in the lever E. In the use of this mechanism, steam from the boiler exerts its pressure against the piston J and through the toggle K on the lever E. The yielding force due to this pressure urges the lever E forward, so that the roller G is kept in contact with the surface of the cam D in all parts of its revolution. Any leakage of steam or water past the piston J is received in the circular groove a and escapes into the atmosphere by the pipe A⁵. The piston J should be of such size that the pressure of the steam against it will act on the lever E with sufficient force to keep the bearing roller G always in contact with the surface of the cam.

The Cam.

The cam is the chief feature of the invention. It will be seen that the design of the cam is a comprehensive one. Mr. Porter has discovered that it is practicable by this means to avoid the defects which are inherent in the eccentric when employed as the means for

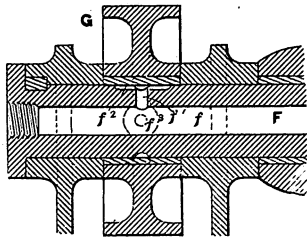


Fig. 8.—Sectional Side Elevation of Hook.

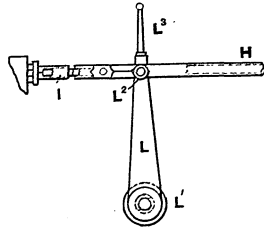


Fig. 10.—Device for Working the Valve.

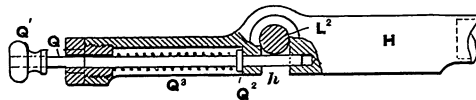


Fig. 9.—Device for Working the Valve.

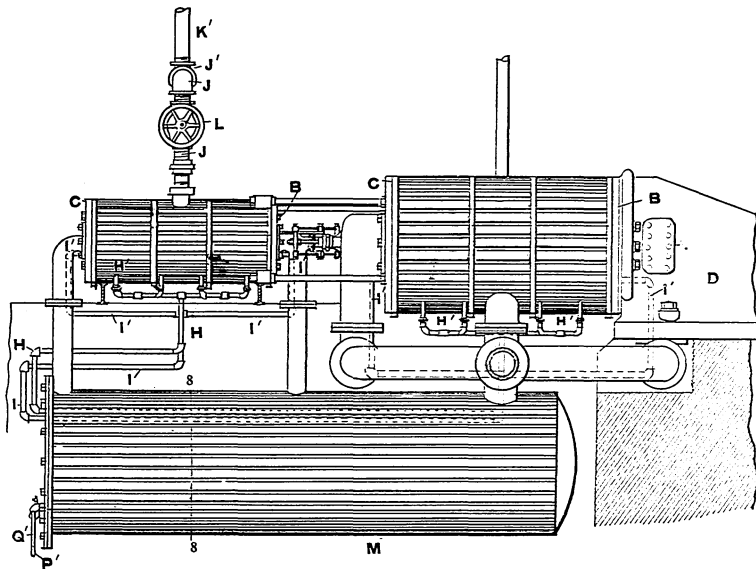


Fig. 11.—Side Elevation, Showing Steam Pipes.

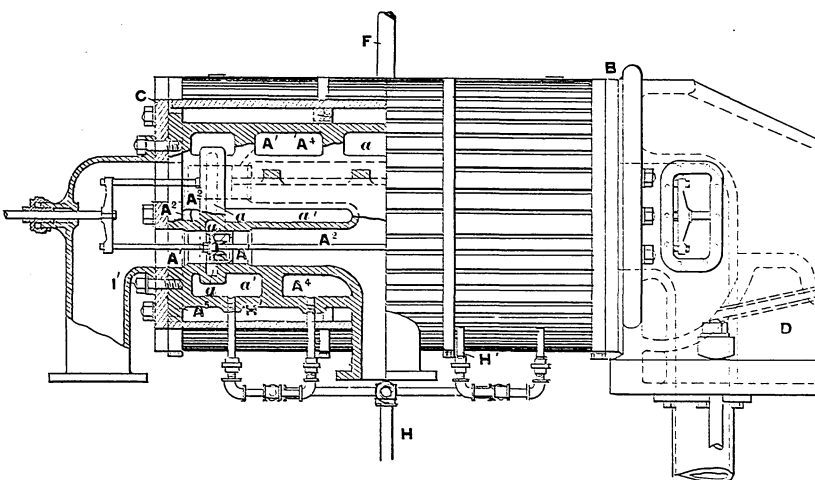


Fig. 12.—Side Sectional Elevation Low Pressure Cylinder.

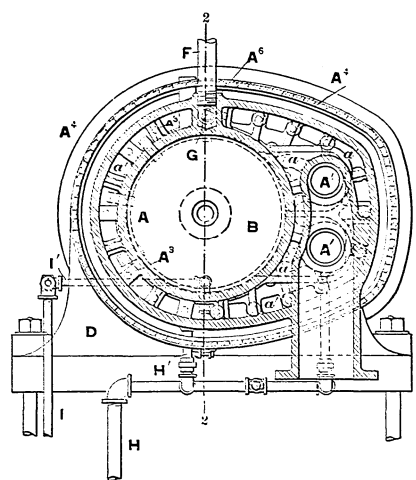


Fig. 13.—Central Section through Fig. 12.

THE NEW PORTER STEAM ENGINE.

Q³ is a spiral spring encircling the pin Q, and exerting a gentle force against a collar, Q², thereon to urge the pin Q into its locked position, where it will hold the hook h engaged with the

the valve by hand, the knob Q', Fig. 9, is grasped and the pin Q drawn endwise sufficiently to liberate the pin, and then the rod H is lifted so as to disengage the hook h. Then a detachable

working steam expansively, and which become more serious the further the expansion is carried, and at the same time to avoid excessive acceleration or retardation of the actuated parts at any

point of its revolution, thus adapting the cam for use on high speed engines.

Fig. 1 presents an outline of the cam. A circle, D^* , of a diameter equal to the throw of this cam is described about its center. This circle may be taken to represent on a small scale the path of the crank of the engine, when the diameter of the circle will represent the stroke of the piston. It should be mentioned that in any cam working against a roller the real periphery of the cam is an ideal line passing through the axis of the roller, and the

ively to coincide with the axis of the roller G . The four principal events are numbered also on the interior circle D^* . The points of cut off and release and compression on each stroke are here shown, both in the path of the crank and in the stroke of the piston. The cam equalizes each of these latter on the opposite strokes, compensating for the inequality produced by the angular vibration of a connecting rod six cranks in length.

W and X represent the widths of the openings made for the admission of the steam.

12, the crank is at N' and the piston is at O' . When the eccentric has arrived at the point of release and compression, 13, the crank is at N^2 and the piston is at O^2 . When at the commencement of the return stroke, the crank is on the center line at N^3 and the piston at the corresponding end O^3 of its stroke, the eccentric is at the point of opening, 14. When the eccentric has arrived at the point of cut off, 15, the crank is at N^4 and the piston is at O^4 . Finally, when the eccentric has reached the point of release and com-

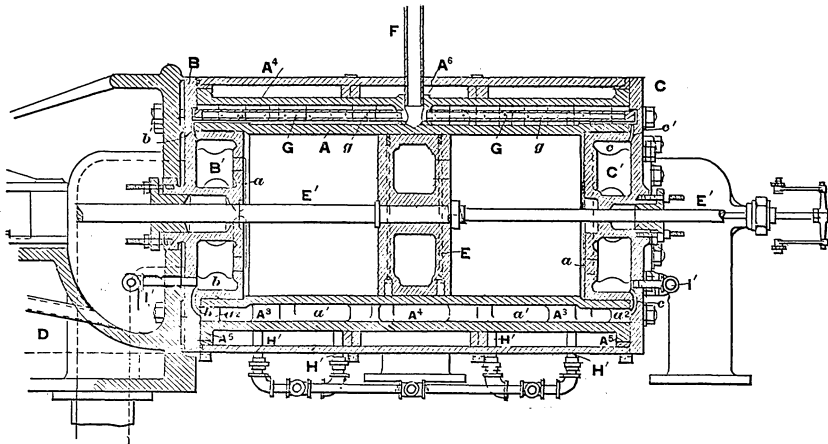


Fig. 14.—Central Longitudinal Section of Fig. 12

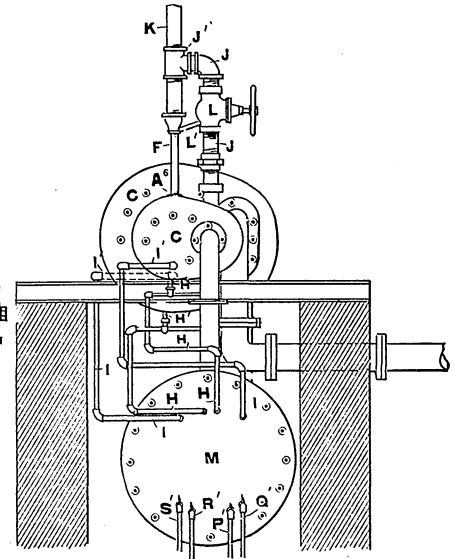


Fig. 17.—End Elevation.

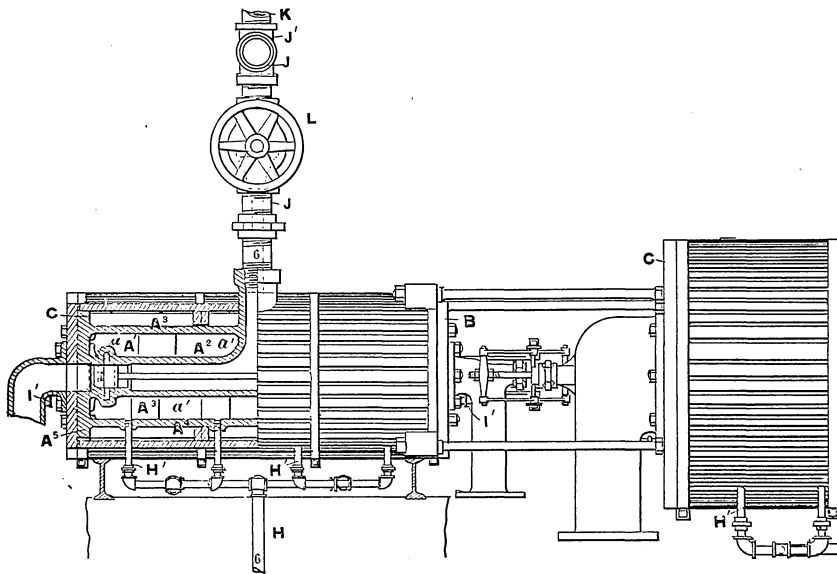


Fig. 15.—Sectional Elevation High Pressure Cylinder.

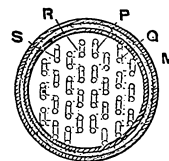


Fig. 18.—Pipes in Reheater.

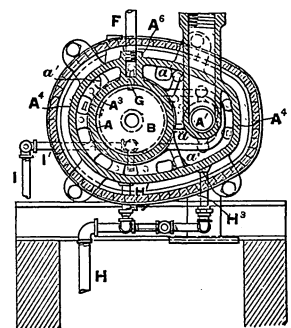


Fig. 16.—Cross Section Fig. 15.

THE NEW PORTER STEAM ENGINE.

material cam must be of such form that, however the angle of its impingement against the roller may vary, the real periphery will always intersect this axis. This periphery is, of course, always meant in this description. In Fig. 1 this periphery is shown intersecting the axis of the roller G . The cam is shown in the position it occupies when the piston is at the end of the cylinder furthest from the crank or when the engine is on the back center. The engine is supposed to be rotating in the direction indicated by the arrow. The events numbered from 1 to 10 occur as the points of the periphery so numbered come success-

Fig. 2 represents the movements of an eccentric of the same throw and advanced so as to cut off the steam at the same point as the cam. The engine is in each case supposed to be rotating in the direction indicated by the arrow. The inner circle is the path of the center of the eccentric. The outer circle may be taken to represent the path of the crank, when its diameter will represent the stroke of the piston. The eccentric has been advanced so that when the crank is on the center line at N the center of the eccentric is at the point of opening, 11. When the eccentric has arrived at the point of cut off,

pression, 16, the crank is at N^5 and the piston is at O^5 . In this diagram W' and X' show the width of the openings made by the eccentric for the admission of the steam. This figure shows what renders the eccentric objectionable when employed to effect an early cut off. The obvious defects are, 1, a too narrow opening for admission; 2, early release and compression and, 3, inequality of cut off and of release and compression on the opposite strokes. Comparison of the two diagrams will show the complete manner in which these are remedied by the cam.

The cylinder A' is secured to the block A³, which is, in turn, stiffly supported upon the same bracket A⁴ which carries the bearings for the cam shaft D' and for the center E'. This bracket is stiffly bolted to the bed of the engine and the block A³ is bolted upon the bracket.

To effect the detachable union of the cylinder A' with the block A³, a female screw thread is formed in the cylinder and fitted in it is a plug, P, having a corresponding male thread, and a large square head, P', by which it can be strongly inserted. The extension P² from this plug, of much smaller diameter, is extended through a hole bored in the block A³ and secured by a nut, A⁵.

Steam Passages.

Another patent issued to Mr. Porter deals with the steam passages and is illustrated in Figs. 11 to 18 inclusive. Steam is admitted between the ports of the cylinder into pipes connecting the ports, but not otherwise connected with the cylinder; the exhaust is through continuations of these pipes at each end leading to external pipes. These pipes and the ports and valve seats formed in them on both sides of the ports, as well as the cylinder, are steam jacketed. Steam is taken into this jacket in the following way: The main steam pipe is continued direct to the jacket, and a branch from this pipe, leaving it at right angles, conducts the steam to the controlling valve of the engine. By this means, as soon as steam is admitted to the pipe from the boiler, it fills the jacket, and all water coming from the boiler or condensed in the pipe passes into the jacket. After two or three minutes, the jacket being properly drained, but maintaining the pressure of the steam therein and consequently attaining the high temperature of the steam, the cylinder, pipes and valve seats have reached the temperature of the steam. The engine may then be started with absolute safety. Little or no water passes into the cylinder, and very little is condensed in it except to supply the heat transformed into work. The valves may also be snugly fitted, and no abrasion of the surfaces will take place. The waste room in clearance and port can also be safely reduced to the lowest practicable point. This construction requires at each end of the cylinder, for clearance and port, only about 2 per cent. additional to the piston displacement. However the boiler may prime, the construction of the steam pipe causes it to act as an efficient separator. The momentum of the water carries it past the angle in the pipe, and the steam goes on to the cylinder practically dry. The important result is thus obtained of extremely small waste room, with absolute immunity from injury by water in the cylinder.

In order to get rid of air in the jacket of a compound cylinder engine, whether the compounding be on the tandem or cross plan, a reheating chamber is employed. A continuous flow is maintained through the jackets and the heads of both high and low pressure cylinders into the pipes of this reheater. This current carries the air with it. To insure a current through each of the jackets and heads, the pipes are made in the reheater in four sections, and the pipe from each jacket and from each pair of heads is connected to a separate section. By this arrangement it is possible, when found desirable, while maintaining a sufficient current through the jackets and heads of the low pressure

cylinder, to take into them steam of a lower temperature than that of the boiler, by means of a reducer or otherwise, returning the condensed water to the boiler separately.

To insure that the current shall move through every part of each jacket without permitting air to accumulate anywhere, the steam is introduced through a perforated pipe extending the whole length of the jacket on the upper side and taken away at several points equally distributed at the bottom.

Detailed Description of Steam Passages.

A', A', Figs. 12 and 13, are valve seats united with the cylinder by properly formed ports, *a*, and connected together and to the ends of the outer shell by straight pipes, A². Except on small cylinders two of these are made valve seats at each end of the cylinder, the valves in which are connected through their stems and work together as one valve. At a sufficient distance exterior to the cylinder and to the valve seats and ports and these pipes is a completely inclosing shell, A⁴, Fig. 14, connected to the cylinder by its heads, A⁵, and by studs, A³, making a steam jacket space, *a'*, which extends continuously around the cylinder and also around the valve seats A', ports *a* and pipes A². The pipes A² are distinct from and clear of the cylinder, so that the steam in the jacket space *a'* may completely surround them. This insures a uniform temperature on all sides of these pipes, and that the valve seats formed in them on both sides of the ports shall be completely warmed before steam is admitted to the distributing valves to impel the piston, and also, that the valve seats shall maintain their true cylindrical form.

The piston valves, reciprocated by proper connections to the working portions of the engine, fit tightly and easily in their truly bored cylindrical valve seats. A', and each exposes its corresponding port, *a*, at the proper periods to the strong steam at a high temperature which fills the pipe A² between these valve seats, and to the exhaust passage which leads axially out and away into a suitable exhaust pipe. The pressure of the strong steam against the inner faces of these piston valves being perfectly balanced, the valves are practically frictionless. The successive exhausts are led directly away in opposite directions through the ends of the jackets without exposing the relatively cool exhaust steam to the heated surfaces so as to abstract their heat.

A⁵, Fig. 14, is a sufficiently stout stud or boss which is chambered in its interior, and the use of which will be explained presently. In the interior of the front head B is an annular chamber, *b*, and in the interior of the back head C is a circular chamber, *c*. These heads are strongly braced and stiffened by radial webs. Free communication is made to the chambers *b* and *c*, from the ends of the jacket space *a'*, through passages *b'*, *c'* formed in the flange of each head, and connecting with openings, *a''*, in the heads A⁵ of the inclosing shell A⁴.

The steam is brought from the boiler through a pipe, K, Fig. 15, which may be provided as usual with a valve, not shown, near the boiler, but which valve is always open except in emergencies, so that under all ordinary conditions the steam stands in the connected pipe J ready to be admitted to the engine on opening the controlling valve L. The pipe F which brings the steam to the chamber or jacket space *a'* is connected

to the pipe K, so that whether this valve be opened or closed the steam will have access through the pipe F to the jacket space *a'*. At the point J' where the steam for the cylinder is taken from the pipe K the current turns abruptly. The pipe F is in line with the motion of the steam as it comes from the boiler, extending directly downward, while the pipe J is at a right angle to such motion. It follows from this arrangement that although the steam taken through the pipe F into the jacket space *a'* is only a small proportion of the total flow through the pipe K, the particles of water which come along with the steam are projected forward in a straight line by their momentum and also by their gravity, and ultimately flow with a small quantity of steam into the jacket space *a'*, and the steam which turns the abrupt angle and flows away to impel the piston is quite or nearly dry.

An active circulation is effected in the following manner: The hollow stud A⁵ in each cylinder receives live steam through the pipe F, which connects with the steam pipe K at a point beyond the controlling valve L, as already described, so as to insure that there shall always be steam supplied thereto. The design admits into the jacket space of the high pressure cylinder steam at the boiler pressure. The steam received through the pipe F is conducted by the pipe G along the whole length of the cylinder and is discharged equally through the perforations *g* distributed throughout its length. Importance is attached to the fact that the holes in the pipe G which discharge the jets of steam into the jacket are arranged in two lines, one on each side of the pipe G, so that the jets through the several holes are projected to the right and left. This insures that the steam shall be delivered actively, and with approximate uniformity through all parts of the upper half of the jacket. The distribution of the holes for the connections of the pipes H over a large portion of the lower part of the jacket insures the removal of the water and a small quantity of the steam and air also with approximate uniformity from all portions of the lower part of the jacket.

Active circulation through the jacket spaces in the hollow interiors of the heads B and C of each cylinder is secured by providing an exit pipe, I', leading from the lowest point of each. The two exit pipes from the heads of each cylinder are united in a single pipe, I, in such a manner as to insure an equal current through each of the two heads. There are thus four exit pipes, one from the jacket space *a'* and one from the heads of each cylinder. These pipes are continued as follows:

M is a capacious chamber of boiler iron or other suitable material, liberally incased in felt, wood or other good non-conductor, and which serves as a receiver and a reheater for the steam in its passage from the high pressure to the low pressure cylinder. However dry the steam may have been brought to the high pressure cylinder it is certain on its discharge, from the loss of heat due to its exchange into power and from other sources, to contain particles of unevaporated water. The construction provides for supplying heat to effect evaporation of such water by circulating steam at a high pressure, through pipes which are inclosed in the receiver. These pipes are divided into four sets, P, Q, R, S, Fig. 18, and circulate steam independently through each of these four sets. The steam for one set, P, is supplied through the pipe

H from the main jacket *a'* of the high pressure cylinder. The steam for an adjacent set, Q, is supplied through the pipe I from the chambers *b* and *c* in the heads of the high pressure cylinder. The steam for the third set, R, is supplied through the pipe H' from the main jacket *a'* of the low pressure cylinder, and the steam for the fourth set, S, is supplied through the pipe I' from the chamber *b* in one head and the chamber *c* in the other head of the low pressure cylinder. The design traps out the water and discharges the air from each set through separate pipes P', Q', R', S'. The cocks or analogous provisions for the latter purpose may be of any ordinary or suitable construction. It is essential that the traps be capable of discharging all the water, both that which is received with the steam through the pipe F and that which is produced by condensation in its work of maintaining the heat of the cylinder, and in its further work of reheating the steam in the receiver or reheater M. The pipes P', Q', R' and S' may discharge their water through separate traps, or may be united in pairs, discharging through two traps, or may all be connected and discharge through a single trap, according to the requirements of each case.

In the case of non-compounding cylinders there can be no current into a reheater. The hollow stud A⁶, as well as the perforated pipes G and the multiple exit pipes H' and separate exit pipes I from the heads, are in those cases dispensed with. The steam from the pipe F may be taken into the jacket space *a'* in any suitable manner; the water is drawn from the bottom of this space and of the jacket spaces in the cylinder heads by a single pipe, and returned to the boiler. The internal communications with the heads are made sufficient to insure a practical equilibrium of pressure throughout.

On Wednesday, May 9, M. M. McFarland, passed assistant engineer, United States navy, will read a short paper to introduce for discussion the subject of the use of water tube boilers in the navy, at the last gathering of the New York members of the American Society of Mechanical Engineers.

Secretary Herbert has found it necessary to postpone the competitive trial of machine guns, which was to have taken place at the naval proving station early in May, owing to the failure of the makers of some of the important guns to deliver them in time. It is believed the tests will take place early in June.

The Permanent Rail Joint Company of Cleveland, Ohio, have been granted a charter of incorporation to manufacture a rail joint patented by J. L. Pope. The officers of the new concern are J. L. Pope, president; E. A. Angell, vice-president, and E. C. Pope, secretary and treasurer. These officials, with C. H. Cady and J. K. Bole, constitute the Board of Directors. The feature of the Pope rail joint is a construction that produces automatic tightening, so that instead of loosening from pressure and jarring the tendency is for it to tighten. This is secured by a series of wedges. Besides the fish plates there is a plate under the rail. Two wedges on each side make seven pieces in all. The ordinary joint, with fish plates and bolts, consists of 14 pieces, and where washers are used this number is in-

creased to 20. It is claimed that after the boltless joint of the new company is once firmly set there can be no motion and consequently no wear. These joints are already in use. They are of steel and for the present will be manufactured in Pittsburgh and Cleveland.

Tennessee Coal, Iron & Railroad Company.

N. Baxter, Jr., the president of the Tennessee Coal, Iron & Railroad Company, has just presented his first report, which shows the operations of the concern during the first complete year since the consolidation with the De Bardeleben Coal & Iron Company and the Cahaba Coal Mining Company. The president refers to the successful weathering of the panic by the company, and deals with the technical developments during the past year. He quotes, as a result of the increased efficiency of the plants of the company, figures showing how the furnace products increased during that year. Thus, he mentions that while the output of pig iron at Ensley for March, 1893, was 3441 tons per furnace, it was 6091 tons per furnace during the corresponding month of 1894. Whether such a comparison is quite a fair one may be open to some question, since we are under the impression that the records of the present year were made with two furnaces, upon which the entire blowing power of the plant of four furnaces was concentrated. He states that the coke produced at the collieries of the company is performing a duty in the company's blast furnaces equal, if not superior, to any coke in the United States, and that the fuel consumption on which iron is now being made from comparatively lean ores is very nearly as low as that of the best Northern furnaces which are smelting the richest ores produced on Lake Superior. This result is attributed to the greater care in the preparation of the raw materials and partly to the general adoption at the company's coke plants of appliances for disintegrating and washing coal prior to coking it. Referring to the coal trade, Mr. Baxter states that the company have succeeded in taking at a profit the largest contract in New Orleans over the competition of water borne coal from Pittsburgh, which has previously controlled that market. He states that the face value of the bad debts accrued during the year 1893 amounted to less than \$40,000 on a business of over \$5,000,000.

Negotiations have been successfully completed both with ore contracts and with connecting railroads, for the reformation of pending contracts, and quite material reductions in the cost of the company's iron will accrue during the present year as the result of the concessions.

Mr. Baxter says that "if it is possible for the present extraordinary value of iron to shrink yet further owing to the competition which has been throwing so many furnaces and iron ore mines into the hands of creditors, this company are prepared to face that shrinkage and to do so without fear of sacrificing the interest of their stockholders." The convict lease in Tennessee expires next year and the company will not renew it.

The introduction of the utilization of waste gases from coke ovens for raising steam has saved at the Pratt Mines \$15,000 per annum in the cost of raising steam for pumping and hauling. Mr. Baxter refers to experiments made with a view to demonstrating the ability to

treat direct metal for the manufacture of steel. The depressed condition of financial affairs has, however, prevented any steps being taken toward providing the capital necessary for the construction of steel works.

The appended report by James Bowron, secretary and treasurer, does not contain the former detailed returns of production at the different plants. It shows that the amount of undivided profit brought forward from the last year was \$1,322,428.67, from which are deducted \$84,128.50, bond premium account. This is the difference below face value on the sale of \$804,000 of treasury bonds of the DeBardeleben Coal & Iron Company after deducting from it the profits on purchases of low priced bonds for the sinking funds. The year's profits were \$685,030.05, against which there were coupon and interest and dividend on preferred stock of \$695,073.64, leaving a balance of undivided profits of \$1,228,256.58. This amount, however, is represented by property, real, personal and mixed, and is not in any separate fund which can be divided. Mr. Bowron renews the recommendation that it be written off in lieu of the depreciation of the value attached to permanent or fixed assets. The bonded debt was reduced by \$44,046.75, leaving it \$9,154,377.07. The net capital expenditure during the year was \$94,799.22.

The Tracy City division, referring to collieries, showed a profit of \$63,403.63. The Pratt Mines division returned a gross profit of \$278,588.54, of which \$139,305.13 is credited to coal account, \$94,769.21 to coke account, and \$29,524.34 to sale store. The Cahaba division showed a profit of \$226,950.53, of which \$129,428.72 was coal account, \$10,105.04 coke account; \$65,766.23 sale store and \$23,971.16 rents. The Cowan division lost on pig iron \$26,571.23. The South Pittsburgh division lost on pig iron \$130,275.03, but earned on a number of other items enough to reduce the loss to \$72,535.49. Included in the profits of this division were \$28,285.93 for the Whitwell colliery and \$13,149.69 for the Whitwell sale store. The Ensley division showed a loss of \$5312.31, and for Alice \$9504. The profits on store, rents and machine shops converted this loss into a profit of \$7118.79. The Bessemer division yielded a profit of \$208,075.28, of which pig iron account is credited with \$101,368.16, ore account \$27,551.16, the different sale stores \$36,075.45, cash checks \$9,927.15, and rents, \$36,058.31. The total profits of the company on stores were \$167,962.92, and on rents \$81,708.88, or nearly \$2,500,000 for these two items, or over one-third of the entire gross profits.

A comparison of the floating debt and available assets in 1893 and 1894 shows a net decrease in the liabilities of \$1,179,633.40, a decrease in the quick assets of \$1,465,867.08, leaving a surplus of quick assets over floating debt of \$602,514.23. The slow assets decreased \$32,252.88, to \$119,940.79. Ultimate assets, specified as consumable part of inventory, &c., are put down at \$361,831.12, making a surplus of all free assets over floating debt of \$1,083,786.14, a decrease of \$233,018.06 during the year.

A new high level bridge is to be built across the Ashtabula River at Ashtabula, Ohio. It will be 40 feet wide, 1000 feet long, and 105 feet above the river. The estimated cost is \$90,000.

The Census Returns of Our Manufacturing Industries.

We print herewith in tabular form the returns of a number of different industries in which the readers of *The Iron Age* are interested. We believe that in many cases the number of estab-

or one-tenth the number, and employ a far smaller number of people, 152,535, the value of the product is greater, rising as it does to \$430,954,348. Not less than 724 concerns make ornamental iron work, but they employ only 18,672 men and produce \$37,906,801 of goods. Altogether the figures, although old, are interesting, and gener-

Aguas Calientes, and a refinery at Perth Amboy, N. J. They will put on a line of steamers between Tampico and Perth Amboy, to carry the product of their smelters to the refinery.

Canada's Pig Production.—Official statistics show that the production of pig iron in Canada was as follows dur-

Census Returns of Iron and Metal Industries.

Mechanical and manufacturing industries.	Number of establishments reporting.	Capital.						Miscellaneous expenses.	Average number of employees and total wages.		Cost of materials used.	Value of products, including receipts from custom work and repairing.
		Aggregate.	Value of plant.						Aggregates.			
			Total.	Land.	Buildings.	Machinery, tools and implements.	Live assets.		Average number.	Total wages.		
Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	
Agricultural implements	910	145,313,997	31,511,412	6,246,748	13,671,576	11,893,088	113,502,585	11,129,548	42,544	21,811,761	31,603,265	81,271,651
Ammunition	35	4,368,529	2,398,483	453,045	1,046,593	898,845	1,970,046	292,856	2,267	1,110,482	2,759,782	6,538,959
Babbitt metal and solder	36	954,654	256,475	101,550	88,350	66,575	698,179	49,866	281	188,229	2,885,894	2,005,102
Bells	22	590,420	230,880	70,300	72,890	87,690	359,540	36,658	430	231,227	389,701	823,010
Belting and hose, leather	93	4,973,420	1,088,371	255,700	299,800	532,871	3,885,049	268,278	1,621	1,114,764	6,132,704	8,633,634
Belting and hose, rubber	17	5,270,068	1,935,943	487,070	492,991	955,882	3,334,125	282,543	1,945	1,043,768	3,479,538	5,512,840
Bicycles and tricycles	27	2,058,072	926,421	22,650	339,371	564,400	1,131,651	242,018	1,925	1,105,728	718,848	2,568,326
Brass	14	1,208,619	861,735	106,800	330,800	424,135	346,884	53,046	819	436,569	1,765,605	2,549,860
Brass and copper, rolled	16	8,011,593	3,423,815	510,000	1,380,815	1,533,000	4,617,778	321,793	2,801	1,577,776	5,493,231	8,381,472
Brass castings and brass finishing.	453	18,663,286	8,451,459	1,842,848	2,440,097	4,198,514	10,211,827	1,222,989	11,903	6,022,489	12,249,607	24,344,434
Brassware	113	10,866,001	4,153,067	626,250	1,255,465	2,271,352	6,712,934	844,475	7,518	4,057,058	7,089,202	13,615,172
Bridges	137	10,960,218	4,251,486	755,768	978,252	2,517,466	6,708,732	652,947	8,921	5,681,364	12,770,146	21,868,068
Bronze castings	14	710,190	217,002	71,219	44,539	101,244	493,188	68,001	311	253,835	695,485	1,165,193
Cordage and twine.	140	22,786,019	12,631,234	1,711,232	4,605,005	6,314,997	10,154,785	987,974	12,506	4,412,640	23,372,637	32,376,454
Crucibles	10	908,152	460,467	120,500	130,038	119,929	447,685	77,354	254	149,210	396,296	726,708
Cutlery and edge tools.	474	12,082,638	5,876,717	1,336,544	2,033,435	2,506,718	6,205,921	790,045	9,487	4,918,152	3,465,124	11,110,614
Emery wheels	17	823,059	292,902	26,000	53,374	153,528	590,157	81,148	292	182,600	189,579	726,465
Enameled goods	19	350,798	143,472	6,000	9,000	128,472	207,326	23,856	391	191,925	118,658	444,942
Files	140	2,291,988	1,776,199	265,970	486,804	1,023,425	1,215,798	130,310	2,666	1,444,941	1,038,943	3,179,649
Firearms	34	4,672,424	2,755,496	418,900	630,350	1,706,246	1,916,928	202,656	2,759	1,700,205	485,946	2,922,514
Foundry and machine shop products.	6,475	382,798,337	187,048,990	41,014,439	51,032,859	95,001,692	195,749,347	24,637,980	247,745	148,389,063	171,145,156	412,701,872
Foundry supplies	21	679,817	353,105	111,900	104,000	137,205	326,712	53,232	212	152,773	357,874	672,440
Galvanizing	27	1,301,973	464,593	144,300	128,900	191,393	837,380	99,192	846	473,111	1,940,712	2,957,143
Gas machines and meters.	38	1,603,423	514,887	73,350	149,250	292,087	1,087,739	105,209	1,071	709,529	675,542	1,898,644
Gas stoves	24	1,099,528	515,229	29,591	141,562	344,076	684,229	118,617	1,031	628,773	840,126	2,137,944
Grindstones	9	78,750	32,500	3,500	3,500	25,500	46,250	5,799	132	56,980	34,742	122,240
Gunpowder	37	9,609,975	5,001,388	942,756	1,657,604	2,401,028	4,608,587	959,240	1,730	1,002,694	3,279,004	6,752,343
Hardware	350	26,271,846	12,330,030	1,929,035	3,660,404	6,740,591	18,941,810	2,400,827	19,671	9,911,486	10,186,442	26,726,463
Hardware, saddlery	102	3,376,356	1,284,496	204,150	315,364	764,982	2,091,860	250,668	3,179	1,547,295	1,624,849	4,118,195
High explosives	32	3,929,503	1,404,498	255,087	468,081	711,320	2,525,015	209,680	820	546,816	2,202,719	4,600,272
Hones and whetstones.	9	97,935	65,450	22,500	13,700	29,250	32,485	1,918	71	27,973	6,332	54,136
Horseshoes, factory product	4	1,299,065	675,950	62,879	68,500	544,571	623,115	42,019	493	282,870	519,449	1,110,032
Iron and steel	645	373,478,018	210,830,316	31,553,087	42,766,656	133,510,573	162,647,702	16,918,753	152,535	84,665,506	295,777,843	430,954,348
Iron and steel bolts, nuts, washers and rivets.	82	10,789,821	5,812,292	1,101,168	1,291,348	3,419,776	4,977,529	587,605	7,341	3,472,202	6,746,301	12,373,031
Iron and steel doors and shutters	7	42,550	23,950	10,000	5,000	8,950	18,600	4,210	53	38,389	29,792	88,515
Iron and steel forgings.	90	7,152,145	4,281,104	1,125,732	699,308	2,455,664	2,871,141	366,112	4,448	2,638,641	4,875,697	9,042,563
Iron and steel nails and spikes, cut and wrought, including wire nails.	138	24,337,549	13,825,194	2,273,151	3,108,506	8,443,537	10,509,355	1,344,674	17,116	7,816,994	22,960,737	34,227,517
Iron and steel pipe, wrought	23	23,622,367	9,043,906	1,678,093	1,917,951	5,447,562	13,578,461	1,095,605	12,064	5,845,462	25,948,798	37,906,801
Iron work, architectural and ornamental	724	21,968,172	10,671,455	2,983,622	2,877,618	4,810,215	11,296,717	1,344,613	18,672	11,951,457	18,620,510	37,745,294
Lead, bar, pipe and sheet	28	4,892,525	2,405,572	881,844	675,800	847,928	2,486,953	208,645	760	552,321	6,882,157	8,351,754
Ordnance and ordnance stores.	4	7,639,991	7,446,383	2,081,866	3,516,829	1,847,688	193,608	18,885	1,459	1,099,306	743,348	2,424,662
Plated and Britannia ware.	68	13,150,990	3,922,351	304,382	999,259	2,618,710	9,228,639	1,276,431	6,919	3,775,315	4,647,890	11,502,966
Plumbers' supplies.	122	9,678,107	3,859,279	988,950	1,085,228	1,785,101	5,818,828	550,938	5,485	3,304,214	5,833,709	11,960,464
Saws	95	6,313,373	2,527,399	611,100	656,912	1,239,387	3,785,974	485,625	2,943	1,859,694	2,346,401	5,572,992
Scales and balances.	76	1,658,655	874,601	190,500	291,625	392,476	784,054	108,056	1,500	837,575	867,955	2,322,744
Screws, machine.	20	1,672,343	928,427	130,500	231,818	566,109	743,916	73,946	1,113	534,943	331,701	1,183,341
Screws, wood	7	5,572,237	3,356,257	322,631	1,238,034	1,785,572	2,215,980	310,519	1,651	625,465	900,676	2,326,645
Shipbuilding	1,010	53,393,074	39,870,665	14,294,878	10,170,301	15,405,496	13,522,409	1,892,551	25,934	16,028,847	16,925,169	40,342,115
Springs, steel, car and carriage.	57	3,459,422	1,727,252	428,159	389,783	909,310	1,732,170	178,290	1,892	1,174,770	2,219,408	4,331,571
Stamped ware.	99	8,692,888	4,284,347	974,250	658,639	2,651,458	4,408,541	630,881	7,075	3,092,872	5,229,888	10,475,271
Steam fittings and heating apparatus.	217	17,017,364	5,853,791	977,000	1,423,441	3,453,350	11,163,573	1,485,212	11,779	7,594,395	10,628,314	23,147,433
Tools, not elsewhere specified.	462	11,376,622	5,232,703	742,349	1,216,408	3,273,946	6,143,919	835,448	7,095	4,144,888	3,517,269	10,528,025
Wire.	24	11,607,885	5,297,694	928,655	1,505,719	2,863,320	6,309,991	447,480	7,804	4,183,802	15,038,540	22,012,804
Wirework, including wire rope and cable.	569	11,757,902	5,178,999	917,042	1,379,625	2,882,332	6,578,903	858,877	7,917	3,983,209	8,325,435	15,552,857

lishments reported in the different industries will be a revelation to the trade. That there should be 910 manufacturers of agricultural implements, employing 42,544 men and turning out \$81,271,651 in product, is less surprising than a record of 453 concerns with 11,903 employees, producing \$24,344,434, or 474 workers of cutlery and edge tools with 9487 men and a product of \$11,110,614. We doubt whether many have been aware of the fact that in 1890 there were 6475 machine shops and foundries, giving work to 247,745 men, to whom they paid \$148,839,063 in wages, and who made \$412,701,872 worth of goods. While the iron and steel works number 645,

ally speaking they reveal a magnitude of interests which few could appreciate without the aid of the returns so presented.

A Denver, Col., dispatch mentions an important mining investment, just completed, whereby M. Guggenheim & Sons, owners of smelters at Pueblo, Col., and Monterey, Mexico, have bought the whole mining camp at Tepezala, Mexico, including copper, lead and silver mines. The consideration is about \$1,000,000. The firm will, it is added, build at the cost of another \$1,000,000 11 miles of railway to connect their mines with the Mexican Central; a smelter and concentrating plant at

ing the calendar year 1893: London-derry, coke, 23,474 tons; New Glasgow, coke, 225,000 tons; Radnor Forges, charcoal, 7422 tons, and Bridgeville, charcoal, 498 tons; a total of 53,894 tons. The importations for home consumption during the fiscal year ending June 30, 1893, were 56,703 tons of pig iron not specially classed, 5944 tons of charcoal iron, and 146 tons of cast iron, a total of 62,793 tons. In 1890 it was 87,613 tons; in 1891, 81,317 tons, and in 1892, 68,918 tons.

It is reported that a Philadelphia engineering company have the contract to erect a \$360,000 smelting works at Hamilton, Ontario, for a local company.

The Evolution of the Babcock & Wilcox Boiler.

It is rather a curious condition of affairs that the particular form which a mechanical design assumes may be dictated by sentiment at one time, over cautious legislation backed by lack of engineering knowledge at another, and by the actual requirements of the problem at still another, and yet all three be practically the same design.

Years ago the public sentiment, strongly developed by the Westfield explosion, called for a steam boiler that should be absolutely safe from disastrous explosions, even if it possessed no other good quality that should inhere in a boiler design. To meet this the firm of Babcock & Wilcox put on the market a boiler, as shown in Fig. 1, its heating surfaces made throughout of cast iron, a metal strong enough, as mere tensile tests would show, for the pressure then (1869) carried, averaging 65 pounds, but totally unfitted to be subjected to the changes of temperature due to irregular feeding and firing or the strains set up due to accumulated scale, for the removal of which no provisions were made. It lacked steam and water capacity, and at the pressure and capacity at which it was run it gave wet steam. But it was what public sentiment demanded; it was safe, and was bought by them until by repeated trials in actual use it was found to lack every other requirement of a good boiler.

Design No. 2 is of a boiler built by the same parties since 1885 to meet the local laws in Berlin, Germany, where no boiler having any diameter over 4 inches is allowed within a certain small distance of a "habitation." In this design wrought iron tubes are used for the heating surfaces, while the gun metal headers are away from the direct action of the heat. The arrangements for cleaning the surfaces inside and out are complete. The service secured is fairly good, owing to the pressure carried—averaging 160 pounds and over—and owing to the fact that 15 square feet of heating surface is allowed for each 30 pounds of water to be evaporated per hour. So that this law practically compels steam users to buy an excess of 50 per cent. of heating surface over that required if ordinary diameters were allowed, which have been found by actual experience to be practically safe everywhere else. Yet this self-same law that cuts down boiler pressure parts to a maximum of 4 inches diameter allows these same boilers to be connected up in a battery to a main line of cast iron steam pipe of any desired diameter, and many are running of 14 inches diameter and over.

Engraving No. 3 represents a boiler just erected for Nikola Tesla, for experimental purposes, to carry from 300 to 400 pounds pressure. All parts are of wrought metal, the headers of steel, and the tubes of best lap-welded clear charcoal iron. The large ratio of heating surface per horse-power of work to be done has to be retained to obtain dry steam, while the diameters are cut down to sustain the high pressure and avoid all riveted joints. This boiler was tested by the Police Department of New York with the following results: The first time it was pumped up at 11 o'clock to 450 pounds and by 3 o'clock it had increased to 455 pounds, due to the water being heated by the boiler that was running alongside. At the second test the pressure was pumped up to 555 pounds and the boiler found to be ab-

solutely tight. These tests prove the accuracy of workmanship of the Babcock & Wilcox works and the skill of their erecting department. It will be noted that this form differs from that shown in Fig. 1 principally in the details of design and in the materials employed.

The difference between the above purely sectional forms and the regular make of the Babcock & Wilcox Boilers for pressures up to 250 pounds is shown in Fig. 4.

The Donau-Trapp Climax Gas Producer.

A new gas producer is now being operated with signal success at the

ducer differs from other producers making gas from oil in being placed almost entirely within the furnace. The only portions outside are the valves for regulating the passage of oil and steam. There is a notable absence of the gauges and cocks which are ordinarily found in connection with oil vaporizers, and which require the constant attendance of an expert operator.

As erected at the Chicago Tire & Spring Works, no change was made in the regenerative furnace for the reception of the apparatus. Gas generators or vaporizing retorts were merely placed in the gas flues on each side of the furnace. These retorts are open double cylinders. The exterior cylinder is designed to superheat the steam. When the producer is in operation, the waste

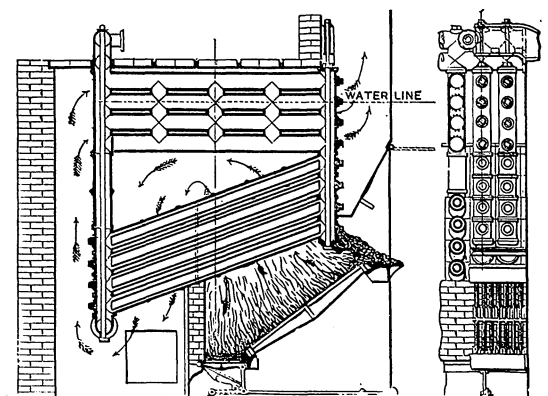


Fig. 1.—Early Type of Babcock & Wilcox Boiler, with Cast Iron Heating Surfaces.

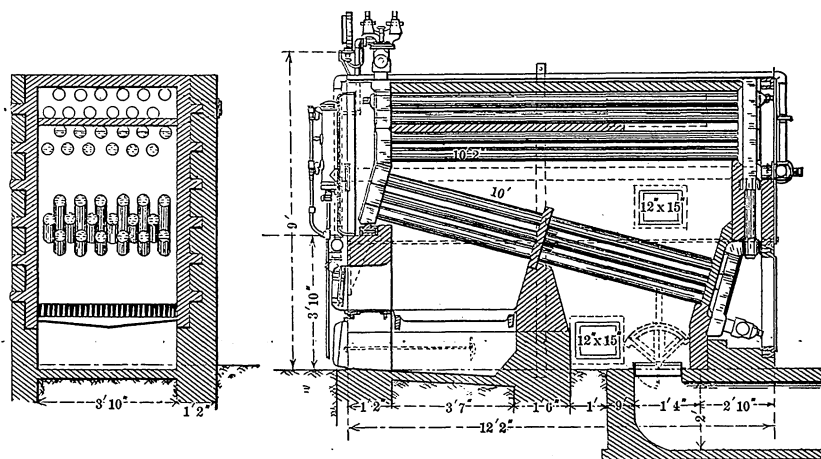


Fig. 2.—The Berlin Type.

EVOLUTION OF THE BABCOCK & WILCOX BOILER.

Chicago Tire & Spring Works, at Melrose Park, Ill. The fuel used is crude oil, and the device is attached to a 12-ton Siemens-Martin open hearth steel furnace. The distinguishing feature of this producer is its simplicity. The oil is fed through a $\frac{1}{2}$ -inch pipe from an elevated tank, and the gravity thus secured furnishes sufficient pressure. The use of a pump for pressure is completely avoided. The flow of oil is regulated by a needle valve in the supply pipe, which enables the supply to be more accurately governed than a globe valve. A jet of superheated steam applied at the orifice of the feed pipe vaporizes the oil and generates the gas. Being attached to a regenerative furnace, there are two burners which are used alternately, being reversed every 15 to 20 minutes. This gas pro-

heat from the active generator passes through the opposite flue on its way to the draft stack and heats the superheater there, in readiness for operation when the supply of oil and steam is reversed and turned into it. The generation of gas takes place in the inner cylinder. The end of the oil pipe, instead of being cut square, is cut at an angle, with the projecting side of the pipe toward the end of the steam pipe. The steam strikes across the end of the oil pipe at a right angle, and owing to the peculiar shape of the latter draws the oil from it. The steam, being superheated, immediately vaporizes the oil. When the furnace is cold it is necessary to burn some wood or other fuel at first until the oil is vaporized and ignited, after which the operation is automatic

and the flame is continuous. The reversing mechanism is very simple. When the melter desires to reverse, he shuts off the oil and steam, then reverses his flue valves, after which he starts the oil and steam in the opposite pipes by merely pulling a lever, which is located close to his valve levers on the charging platform. The producer at the Chicago Tire & Spring Works has been in constant use since March 23, to the entire satisfaction of the managers of the works, who state that it not only gives no trouble but that with it they have effected a great saving

melting, as well as for brick burning, tile making, reducing ores, &c., being easily regulated for a high or low temperature. The inventor has also made adaptations of the system for the use of stationary engines, locomotives and marine engines. The owners are the Donau-Trapp Climax Gas Producer Company, room 1644 Monadnock Building, Chicago.

The South Park Commissioners of Chicago have again sold the World's Fair buildings. This time they have

work in house wrecking at Jackson Park. It is understood that the firm are backed by some of the leading Chicago dealers in old iron and steel.

The Gigantic Wheel.

A company has been formed in London under the name of The Gigantic Wheel & Recreation Towers Company, Limited, to construct and work a wheel somewhat similar to the celebrated Ferris wheel. It is to be erected at Earl's Court Exhibition, and the first length of one of the legs for the towers has been placed in position. The general design of the whole structure is by Lieut. J. W. Graydon, and the contract has been taken by W. B. Basset, managing director of Maudslay, Sons & Field. It is to be 300 feet diameter, while the diameter of the Ferris wheel was 250 feet, and it will have accommodation for 1600 people, instead of 1368.

But it is not only in size that the Gigantic differs from the Ferris. The English wheel will be carried on two towers 175 feet high, having saloons on their tops and at intermediate stages, surrounded on three sides by balconies. Communication with the top of these towers will be by lifts as well as by staircases, and they will be connected by a passage running through the axle of the wheel. This is to be 7 feet diameter, and will be built up of mild steel bars and plates; while in the Ferris wheel the axle is a solid steel forging, 32 inches diameter and 30 inches at bearings.

Another great point of dissimilarity is in the manner of driving. The new wheel is to be driven by a steel wire hawser $1\frac{1}{2}$ inches in diameter. There will be two of these, one on either side, passing round grooves on the sides of the wheel at 195 feet diameter; but it is only intended to use one at a time. The motive power will be taken from two 50 horse-power dynamos, and of these also it is calculated that one will be sufficient, the other being merely in reserve.

The towers are being made and erected by the Arrol's Bridge & Roof Company of Glasgow. Each tower stands on four concrete blocks 15 feet deep, 15 feet square at top and 18 x 19 feet at the bottom. Each leg is 94 feet long, 24 inches square in the middle, and tapering to 16 inches square at each end. They are formed of four $3\frac{1}{2} \times 3\frac{1}{2} \times \frac{1}{2}$ inch angles, joined by $2\frac{1}{2} \times \frac{3}{8}$ inch bars, stiffened by $\frac{3}{8}$ -inch plates at intervals. They stand 24 feet apart at the foot, and 5 feet at the head, where they are joined by a cross piece.

The axle is being made at the Maudslay works in Lambeth, and the order for the carriages has been given to Brown, Marshall & Co., of Birmingham. Of these there are to be 40, each 25 feet long, 15 feet wide and 10 feet high, accommodating 40 passengers. There will be eight stages from which they can be entered, so that the wheel will stop five times during each revolution, which will take about 20 minutes.

At a meeting of the Board of Directors of the H. C. Frick Coke Company held in Pittsburgh last week, it was decided to pay the widow of Jos. H. Paddock, chief engineer of the H. C. Frick Coke Company, who was killed in the recent riots in the Connellsville region, the sum of \$600 per year for 15 years, payment thereof to be made quarterly, commencing April 1, 1894.

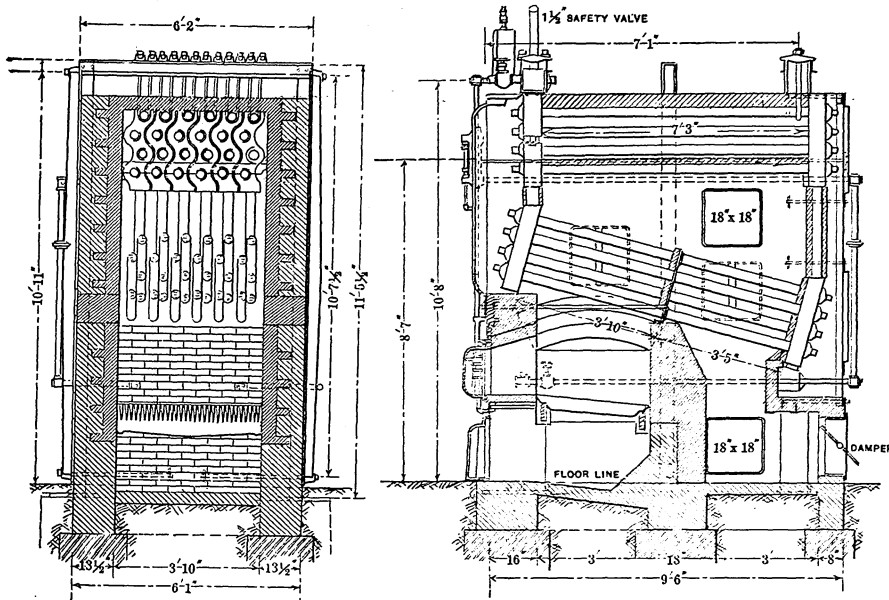


Fig. 3.—Boiler for Very High Pressures.

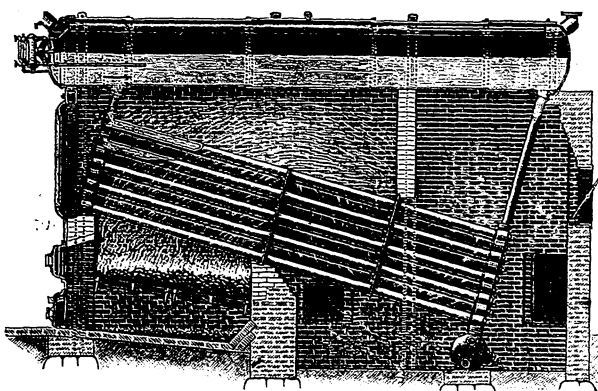


Fig. 4.—Present Form of Boiler.

EVOLUTION OF THE BABCOCK & WILCOX BOILER.

in the quantity of oil consumed as compared with previous methods employed, amounting to from 25 to 30 per cent. It is also very much cheaper than coal, besides being perfectly free from sulphur and thus turning out a purer metal. In running this 12-ton furnace from 40 to 50 gallons of oil per hour are used. No special labor is employed in operating the producer, but the melter gives it such attention as is necessary, which is merely to regulate the flow of oil.

This producer is so constructed that it can be used anywhere that a supply of steam is obtainable. It is adapted not only to regenerative furnaces, but also to reverberatory furnaces for puddling and heating or to furnaces for glass

sold them to Graff & Co., house wreckers, of Chicago, for \$87,500. At a special meeting of the commissioners on the 26th ult., two bids were received and opened. The Chicago House Wrecking Company offered \$30,000 for the structures, but the bid of Graff & Co. was accepted. The conditions of the sale are that \$27,500 is to be paid in cash and the balance in monthly installments of \$4000. A stipulation is also made that the structures at the northern end of the park shall be cleared away by September 1 next. On the larger buildings more time is allowed, and it is not probable that Jackson Park will be entirely cleared of World's Fair structures before May 1, 1896. Graff & Co. have already done considerable

American vs. European Basic Bessemer Steel.

BY J. B. NAU, ALLEGHENY, PA.

(Concluded from page 791, April 26.)

Basic Steel in the South.

In our Southern States the conditions are vastly different from the European districts previously mentioned. Here in the South all raw materials, such as coal, ore, limestone, dolomite, are abundantly supplied, and in most cases in such close proximity that only a relatively small sum has to be spent to bring them to the furnace site. The money spent in mining and quarrying some of them is also considerably lower.

European labor is much lower than American labor, and of all European countries, Belgian labor is the cheapest. In spite of this fact the cost price of coal in Belgium, even right at the seat of the coal mines, is still high. In his table No. 2, Mr. Tordeur figures Belgian coal both at Charleroi and Liege at \$2.40 a ton of 2204 pounds, and the coke at \$3.84 and \$3.60 per ton respectively at Charleroi and Liege.

This high price is mostly due to the enormous difficulties that Belgian coal mine owners have to overcome to mine their products. These mines are worked to considerable depths, 2000 to 3000 feet being common. In some cases even the mines are over 3000 feet deep. Such great depths require heavy hoisting machinery and powerful pumps, all conditions tending to considerably decrease the output and to augment the cost price per ton.

Coal and Coke.—In our South the conditions are very different. There the coal is mostly found in horizontal or only slightly dipping veins, and most always above water drainage. Consequently, it can be mined by inexpensive drifts. Besides, these coal fields are enormous in extent.

In Alabama, it is claimed that to day a ton of coke does not cost more than \$1.50 at furnace site. If we compare the prices of coal and coke in our Southern States to the prices in Belgium and Luxembourg, we shall have the following table:

	Coal.	Coke.
South.....	\$0.825	1.67
Liege.....	2.40	3.60
Charleroi.....	2.40	3.84
Dudlange.....	3.46	4.61
Longwy.....	3.37	4.51

In this table, for comparison's sake, the prices are all applied to a metric ton of 2204 pounds. We must state at once that though the prices in the South for coal and ore are already considerably lower than the same prices are in Europe, before a few years are over these prices will still further be reduced.

The coal and coke industry is a comparatively new one in the South, and the methods will to a large extent be improved on. Coke is still made in the old fashioned beehive ovens, whereas in Europe, especially in the last few years, the already improved furnaces used then have been still further improved by the introduction of machinery and appliances which allow of the collection of all the by-products, such as tar, ammonia, &c. These by-products contribute considerably in Europe to decrease the cost price of coke, and we hope at least will do so in the

United States at an early date. Even without collecting these by-products, many improvements can and will be made. That this will happen is sufficiently illustrated by the continual dropping of prices in the South in the last few years.

Ore.—The ores found in Alabama and Tennessee are mostly red and brown hematite and fossiliferous ores. They are found in great abundance all over the two States. In order to give some indications as to their average composition, we append here a table showing a series of analyses of ores from the two States, Alabama and Tennessee:

Table IV.

	Alabama.			Tennessee.								
	1	2	3	4	5	6	7	8	9	10	11	12
Silicon.....	8.03	17.36	8.10	9.27	16.08	12.72	13.12	5.63	4.78	3.60	14.15	12.21
Alumina.....	4.92	5.52	3.60	7.17	7.41	6.67	5.26	3.28	3.45	.....	.....	.....
Oxide of iron..	55.07	75.12	75.25	68.80	68.24	50.76	54.73	41.06	37.67	81.60	65.53	46.07
Lime (CaO)....	16.68	0.50	0.25	2.48	trace	11.18	11.30	24.87	25.13	.....	.....	27.02
Carbonic acid..	13.13	0.39	0.19	2.67	trace	10.55	9.79	21.00	23.20	.....	.....	.....
Magnesia.....	traces	.....	.....	0.66	0.58	1.42	0.83	0.11	1.04	.....	.....	.....
Phosphoric acid.	0.80	0.24	0.59 to 1.25	2.084	0.923	2.224	1.798	1.184	1.278	0.184	1.409	1.209
Manganese oxide.	0.29	0.25	0.50 to 3.00	.....	.....	.....	.....	.....	.....	.....	.....	.....
Metallic iron..	39.24	52.58	52.67	46.76	46.36	35.53	38.31	28.74	26.36	57.10	45.83	32.22
Moisture.....	.....	.....	.....	3.70	2.70	3.63	1.90	0.68	0.66	.....	.....	.....

The three analyses under the heading Alabama are analyses from ores that are regularly used in the blast furnace in the Birmingham district. Nos. 1 and 2 are red hematites. No. 3, on the contrary, is a brown ore, and contains sometimes as high as 3 per cent. of manganese oxide. The presence of this element is very valuable for basic Bessemer iron. With the exception of No. 1 they are high in iron, and in that respect they have a decided advantage over the ores used in the Luxemburg-Lorraine ore belt in the manufacture of basic steel, and of which a certain number of analyses are shown in Table I. Even ore No. 1, itself, compares very favorably with the best grade of ores of that district, as well in iron as through its easy smelting qualities. These three ores, if taken by themselves, without considering the composition of the ash in the coke, do not require an excessive amount of lime to melt them down in the blast furnace, and the mixture made from them will still be much richer in iron than any mixture made from Luxemburg-Lorraine ores. Besides, they have the great advantage of being, so to say, free from sulphur. This element, when found in our Southern pig iron, is generally derived from the coke, which contains on the average 1 per cent of sulphur and sometimes more. The second series of ores in this table, under the heading of Tennessee, are all from a property that I visited about three years ago. This property, which extends over several thousand acres, lies about 14 to 20 miles west of Knoxville. The ores of which the analyses are appended have all been taken from that property, from a certain number of veins varying in thickness from 5½ feet to 14 feet. The nine analyses (Nos. 4 to 12) of the table have been taken from a greater number of analyses in my possession, of which they represent a fair average. Some of them are very siliceous, such as No. 5, which has been taken as an average of a certain number of analyses; but still the amount of iron that they carry makes them valuable, especially when mixed with some of the other ores such as Nos. 8 and 9, that carry, on the contrary, much lime and alumina.

Nos. 4 to 9 are red hematites that in an average mixture in a blast furnace may contain about 40 per cent. of iron. The ores in this region show more phosphorus than the ores from Alabama, and may, therefore, be more suitable for basic Bessemer purposes. No. 10 is an incomplete analysis of a brown hematite. Like the average of the brown hematite of that region, as well as in Alabama (see example 8), it is high in iron, but contains less phosphorus. All these brown hematites in the South contain generally a certain amount of manganese, while their iron contents mostly vary between 50 and

60 per cent. Nos. 11 and 12 are two average analyses of nine samples each. They are red hematites, and in general similar to some of the other samples in the table.

It is unnecessary to dwell for any length of time on the amount of ore to be found in those States. Immense supplies of them will be found everywhere. A large amount can be worked entirely above drainage by driving tunnels or drifts right into the different veins. It can be mined (and in Alabama it is done to-day) at the rate of 50 cents a ton on board cars at the mines. This price even can be considered as a maximum to-day.

One objection that has hitherto been made to Alabama and Tennessee ores is their siliceous character. This, it is claimed, and undoubtedly with some right, will be the cause of difficulties in their use as raw material for the basic process.

The following table shows an average analysis of the different classes of iron made in the South (Birmingham district):

Table V.

	Silicon.	Sulphur.	Phosphorus.	Manganese.	Graphite carbon.	Combined carbon.
1 foundry.....	3.10	0.02	About 0.55	0.25	3.49	0.07
2 foundry.....	2.95	0.03	0.55	0.22	3.55	0.07
3 foundry.....	2.55	0.035	0.55	0.21	3.48	0.10
Gray forge.....	2.00	0.073	0.55	0.19	3.00	0.57
Mottled.....	1.60	0.095	0.55	0.14	2.11	1.22
White.....	0.84	0.289	0.55	0.10	0.10	2.92

Some of these irons, especially the four first, contain, indeed, a pretty high amount of that element; too much, indeed, to make a good iron for the basic process.

Table VI shows the average analysis of iron in the Longwy and Luxemburg district. The figures are taken from personal notes, but the classification has been arranged in order to be compared to the above table.

Table VI.

	Silicon.	Sulphur.	Phosphorus.	Total carbon.
1 foundry.	2.898	0.067	1.7 to 2.2	4.039
2 foundry.	2.598	0.073	1.7 to 2.2	3.88
3 foundry.	2.045	0.085	1.7 to 2.2	3.425
Gray Forge	1.2 to 1.8	0.10 to 0.13	1.7 to 2.2	3.34
Mottled	0.8 to 1.2	0.12 to 0.15	1.7 to 2.2	3.20
White	0.1 to 0.8	0.14 to 0.18	1.7 to 2.2	3.00

No manganese is given in this table, this element varying with the amount of manganiferous ores added to the burden of the furnace. But where none is added, 0.3 to 0.4 may be about the right figure for manganese in the iron of the upper grades, while the lower grades contain less. It may be seen that with the exception of No. 1 foundry iron, the average content in silicon is about one-half of 1 per cent. higher in our Southern iron than in the irons from the Luxemburg-Longwy district. In all the Southern ores, however, the sulphur is lower. Nos. 1, 2, 3 foundry irons of Table VI are never made for basic Bessemer purposes, as this class of iron would be too high in silicon. The three last named, gray forge, mottled and white, are the only ones made for that purpose, and in this case the burden in the blast furnace always includes about 5 per cent. of manganiferous ore with 16 to 20 per cent. of manganese. Under these conditions the sulphur in the pig is kept down, nevertheless this element sometimes reaches the figures given above, though mostly it is lower. If in our Southern furnaces the same amount of manganiferous ore were added, the sulphur, instead of being 0.298, as shown in Table V, could be made to drop below 0.1 per cent. In that case the white irons of Table V would constitute an excellent iron for basic purposes.

In all European basic Bessemer works, in Germany, in Luxemburg, in Belgium, in Eastern France, ores containing too much sulphur for basic iron are smelted, and in every case the sulphur content of the pig iron is reduced to less than 0.1 per cent. by the addition of manganiferous ores to the burden of the blast furnace.

In Table V, of our Southern irons the white iron contains less than 0.10 per cent. of manganese, while its sulphur content is high. This is a proof that it has been made from a mixture into whose composition entered no manganiferous ore. The addition of such ores can easily be made. Some ores containing a certain percentage of manganese are found nearly always with brown hematite No. 3 in Table IV contains sometimes as high as 3 per cent. of that element, and when judiciously mixed with other ores in the blast furnace it certainly has a very beneficial influence on sulphur. Though it is advisable to have about 1.5 to 2 per cent. of manganese in basic Bessemer irons, still in more than one European works pig irons with less manganese are treated (see Hoerde and Kladno irons in Table II, also paper on "Sulphur in the Basic Bessemer Process" in *The Iron Age* of January 18, 1894).

This would show that with Southern ores, siliceous as they are, still a suitable iron may be obtained for basic Bessemer purposes, without applying first a decilicizing method. With the ores under the heading Tennessee, in Table IV, such irons could be obtained containing enough phosphorus for their treatment by the basic Bessemer method.

Alabama iron in regard to phosphorus seems to be more suitable for basic open hearth, but in case of need, and should it be judged more economical, this phosphorus content could easily be raised by the addition of phosphoric cinder in the blast furnace.

Lime and Dolomite.—Lime and dolomite are found in large deposits all over this region. To these materials we must add in Tennessee the large deposits of pink marble. I append here analyses of some of them:

Table VII.

	Alabama.		Tennessee.		
	Limestone.	Dolomite.	Limestone.	Dolomite.	Marble.
	1	2	3	4	5
Silica	4.20	0.74	2.03		0.09
Alumina	2.29	0.64			
Iron oxide	0.37				
Lime	51.33	32.03	52.20	29.60	54.12
Magnesia	1.05	19.10		19.50	
Carbonic acid	40.33	46.23	41.00	45.11	42.54
Sulphur	0.03				

Limestone 1 is used in Alabama blast furnaces and constitutes an average good limestone for that purpose. Dolomite 2 is of excellent quality and will undoubtedly constitute a first-class material for basic linings or converters after being burnt. The limestone, dolomite and marble under the heading of Tennessee come all from the same region, where they form huge deposits, covering several thousand acres, right on the banks of the Tennessee River, at about 14 to 15 miles northeast of Knoxville, not more than 5 to 10 miles away from the ore deposits on the left side of the river and about 25 to 30 miles distant from the coal fields. The marble especially, of great purity, with a stain of iron oxide, when burnt would yield a lime of exceptional qualities for iron in the converter. These materials, quarried right on the spot, would not cost more than 35 cents per ton at the works.

With all these figures established we shall now be able to figure out the cost price per ton of product in steel works established in Tennessee and Alabama, and compare them with the prices given for Dudlingen and Longwy and for the steel works to be built at Charleroi and Liege, in Belgium. The prices that we will establish here are supposed to belong to steel works capable of making about 300 tons in 12 hours and taking their iron directly from the blast furnace without remelting in the cupola.

Furthermore, in the establishing of these prices I naturally take a region that is known to me. This place is crossed by the East Tennessee, Virginia & Georgia Railroad from Knoxville to Bristol and further north. It borders also on a length of several miles on the Tennessee River, navigable the greater part of the year.

In Table VIII we considered the ore as containing on an average 40 per cent. of iron. When compared with ores in Table IV, it will be found that this is not too high. In Alabama I am informed that the actual cost price of ore on board cars at the mine does not exceed 50 cents a ton. If we assume the same price we have 15 cents left to cover the freight over a few miles. As for

coke, we consider that 1.15 tons ought to be an outside figure. In the Pittsburgh region, in many instances, less than 1 ton of coke is required for Bessemer iron. The basic Bessemer iron is white or mottled, requiring less coke than foundry iron. In Table I it has

Table VIII.—Cost Price per Ton of Pig Iron (2,240 Pounds).

	Quantities, in tons.	Price per ton of material used.	Price per ton of pig iron.
Ore	2½	\$0.65	\$1.63
Coke	1.15	1.80	2.07
Limestone	¾	.35	.26
Labor			1.30
General expenses, taxes, incidentals, &c.			.40
Repairs, tools, oils, &c.			.45
Relining furnace			.20
Total			\$6.31

Table IX.

	Cost price.	Weight per ton of ingots.	Cost per ton of ingots.
Iron (1.18)	\$ 6.31	2,640	\$7.446
Ferromanganese	60.00	15	.450
Coal	1.00	375	.266
Dolomite	5.00	50	.125
Wood			.005
Lime (18 per cent.)	3 00	400	.600
Tar (about 10 per cent. of burnt dolomite)	.12	¾	.090
General expenses, repairs, taxes, &c.			.750
Labor			1.500
Total			\$11.232
Less value of basic slag			.600
Total per ton of 2,240 pounds			\$10.632

been shown that in the Luxemburg region the coke per ton of such iron amounts to nearly a ton, while the ores yield only 31 to 32 per cent. of iron. In another instance quoted it amounted to 1.13 tons per ton of iron. In *Stahl und Eisen* (1891) the average amount of coke required per ton of similar iron for the year 1890 amounted to 0.888 ton in the Peine Steel Works, Germany. The ore yielded 36.52 per cent. of iron. In the same works 0.940 ton of coke per ton of iron was used in the year 1891, because the coke was of a worse quality than in the preceding year.

In Table IX, 1.18 of iron is supposed to be required per ton of steel. In the works of which I had charge in Europe the daily losses for a whole month varied from 11.66 to 21.19 per cent. This includes the losses through burning and the scrap made. If we consider as steel only the good ingots and butts fit to be rolled into billets, while the scrap is considered as a loss, our loss for one whole month amounted to 16.12 per cent. But if scrap is not considered as a loss but on the contrary as steel, our monthly loss was only 12.99 per cent. In Table IX I took 15 per cent. as real loss and 3 per cent. as scrap, total 18 per cent. Dolomite has been taken as costing \$5 a ton dead burnt. This

price will undoubtedly be high enough, as will be seen in the following figures:

Price per Ton of Burnt Dolomite.

Two tons of dolomite stone, at 50 cents a ton.....	\$1.00
Half ton coke, at \$1.80.....	.90
Labor (three men at \$1.60 a day making 5 tons).....	.96
Refining of cupola.....	.80
Repairs and incidentals.....	.60
Total.....	\$1.26

This shows that \$5 will more than cover it, especially when the dolomite is right on the spot, as is the case here. Lime also, when no freight is required, will cost less than \$3 a ton, and probably not more than \$2. From the total price of \$10.73 we ought to subtract still 3 per cent. scrap, or 66 pounds per ton, at, say, \$8 a ton, or 24 cents, which would leave total price per ton of 2240 pounds, \$10.49. It is claimed that in Alabama a ton of pig iron at present costs \$6.37 a ton of 2240 pounds. This is foundry iron. Mottled iron, requiring less coal and allowing of a greater output, thereby decreasing the general costs, taxes, incidentals, repairs, &c., will cost less, so that in that region steel can be made at a cost price within \$10.49 a ton of 2240 pounds.

But let us suppose for a moment that Southern irons are really too siliceous to be treated directly either in a basic Bessemer converter or a basic open hearth furnace. In this case an iron with 1.6 to 2.0 per cent. of silicon, containing little sulphur, as shown in Table V, can easily be made. Since the basic Bessemer process requires an iron containing about 0.3 to 1 per cent. of silicon, the iron above mentioned would have to be desilicized before its treatment in the basic Bessemer converter. The only thing that really will be required in that case will be the removal of about one-half of the silicon content of the iron, thereby obtaining a new iron with less than 1 per cent. of silicon. In other words, a white iron will be the result, which having all the properties of a white iron can be treated like it. In order to obtain such a result the following method could be followed: Every cast from the blast furnace could be run directly from the blast furnace into a kind of acid converter, where the required amount of silicon could be removed in a few minutes with the blast from the furnace blowing engine. This blowing can be done while the blast is stopped in the furnace to attend to the tapping hole. It can be done sideways near the surface of the metal, which would require very little blast pressure. When it has been judged that the silicon content has been sufficiently decreased, the metal, which is then white pig iron or practically so, will be tapped from the decilicizing vessel and cast either into the ordinary pig iron molds or into an iron ladle to be taken at once to the basic Bessemer converter. But if necessary it can be blown further and enough to remove nearly all the silicon and part of the carbon, whereby a suitable cheap scrap would be obtained, to be used in the basic open hearth furnace. This method, doing away with all the machinery, molds, special blowing machinery, hydraulic cranes, pumps and everything required in Bessemer works, can be carried out very cheaply. The blowing could be attended to by the blast furnacemen. Undoubtedly not more than 5 per cent. of loss of metal would be incurred thereby, probably less. Then the cost price would be increased by the following items. To obtain 1 ton of white iron:

0.05 of original pig at \$8.31.....	\$0.315
Labor, repairs, &c.....	0.10
Total.....	\$0.415
Original price of pig.....	0.31
Total.....	\$0.725

The price per ton of basic steel would be increased as shown here:

1.18 tons at \$6.725.....	\$7.94
Instead of.....	7.446
Excess.....	\$0.50
Total price per ton of basic steel.....	\$11.13
Or if we deduct for scrap.....	.22
Final cost price per ton of 2240 pounds.....	\$10.91

The above prices have been established by taking as a basis outside figures for every item. The prices of all the raw materials will steadily be decreased as long as the methods can be improved and the total output increased.

But in the Luxemburg Belgian districts the contrary will rather happen. Belgian coal cannot come down in price. If anything, it will go up, on account of the steadily increasing difficulties that are encountered there every day in the extraction of the coal from such great depths. The greater the depth of the mines the higher will be the price of the coal. Luxemburg Lorraine ores also are extracted to-day at as cheap a rate as ever will be obtained. The only cheapening of these products can be obtained by the introduction or invention of still more improved methods, which can be introduced here too.

The present freight rate on pig iron from Alabama to New Orleans has been quoted to me at \$2.55. At this rate a ton of Southern steel on board cars at New Orleans would be \$10.49 + \$2.55, a total of \$13.04 for 2240 pounds, and a ton of steel made from previously desilicized steel, \$10.91 + \$2.55 = \$13.46. Reduced to metric tons of 2204 pounds to compare with European basic steel, the prices will be as follows:

One metric ton of Southern steel, f.o.b. New Orleans.....	\$12.83
One metric ton made from previously desilicized metal, f.o.b. New Orleans.....	13.23
Belgian steel, f.o.b. Antwerp.....	14.20

Treasury Decisions.

(1) *Protests, Two Sets of.*—(2) *Ball and Socket Joints for Iron Water Pipe.*

Before the U. S. General Appraisers at New York, March 19, 1894. In the matter of the protests, 21,252b, &c., of H. L. Colpoys, agent, against the decision of the Collector of Customs at Suspension Bridge, N. Y., as to the rate and amount of duties chargeable on certain ball and socket joints for water pipe, imported per rail on the dates named in annexed schedule. Opinion by Wilkinson, General Appraiser.

In the cases before the board two sets of protests were duly filed with the Collector. One set was made by the agent of the appellants at the port of entry, while the other was forwarded to that port by the principals in Rochester. The first set claimed that the merchandise is dutiable as cast iron pipe, under paragraph 160, N. T., while the second claims under both paragraphs 137 and 160.

The board is of the opinion that any sufficiently specific protests filed within the statutory period of ten days should be entertained, and will therefore consider both sets as if they were alternative protests.

The merchandise consists of ball and socket joints intended for connection

with a large water pipe. A joint includes a cast iron zone which turns in a socket formed of angle iron, channel iron, bar iron, and boiler iron.

Paragraph 137 is as follows:

"Beams, girders, joists, angles, channels, car truck channels, T T, columns and posts or parts or sections of columns and posts, deck and bulb beams, and building forms, together with all other structural shapes of iron or steel, whether plain or punched, or fitted for use, $\frac{1}{16}$ cent per pound."

The paragraph provides for only those angles and channels which are structural shapes. We find that the angles, channels and bars in this case are not structural shapes, and we hold that no part of the merchandise is dutiable under paragraph 137.

The entire article is something more than a cast iron pipe, but the parts are readily separable for assessment of duty, and we hold that the portion which is cast iron pipe is dutiable under paragraph 160. To that extent the claim is sustained.

The protests not calling for the consideration of any other paragraphs than the two mentioned, the assessment of duty at 45 per cent. upon the remainder of the merchandise is affirmed.

Coal Mining Wages in Alabama.

The Tennessee Coal, Iron & Railroad Company have offered the following rates and agreement to their miners:

Price of mining from now until July, 1895, to be 35 cents per ton at Pratt Mines and Blockton, at Blue Creek 10 cents less than the present price, based on No. 3 foundry iron at \$7 or less net to the company at their furnaces in Alabama. When the price of this grade of iron advances to \$7.50 net to us we will advance the price of mining one-fourth of the reduction, or in the case of Pratt Mines say $2\frac{1}{2}$ cents per ton. When the same grade goes to \$8 per ton net to us we will advance one-half of the reduction, or 5 cents per ton at Pratt Mines. When same grade goes to \$8.50 net to us the price for digging will advance one-fourth more, $4\frac{1}{2}$ cents per ton at Pratt Mines. When the price goes up to \$9 net to us we will advance to the old price—namely, 45 cents at Pratt Mines. If this grade of iron goes to \$10 net to us we will advance $2\frac{1}{2}$ cents, and for any advance above \$10 net to us we will continue to advance the price of mining $2\frac{1}{2}$ cents per ton for each \$1 rise. We will reduce the price of powder to \$1.60 per keg. Will reduce the relative rate for rents to 10 per cent. Will make some other reductions in supplies at an early day.

At Milwaukee, Wis., on the 24th ult., Miller, Noyes & Miller sold at auction 6615 shares of Chapin iron mine stock, under power of sale, to Chas. Schley, a broker. The par value of the stock was \$165,375, but Mr. Schley's check in payment of his purchase amounted to only \$661.50. But it was understood that the shares belonged to Ferdinand Schlesinger and were held as collateral by one of the city banks. It was understood also that Mr. Schley represented the bank, and as there was no other bidder the auction sale was the formal way in which the bank got a clear title to the stock. The Marine Bank holds shares as collateral amounting to a little more than a controlling interest in the Chapin mine, and will sell it at auction on May 22.

Tabor Indicator with Houghtaling Reducing Motion

The Ashcroft Mfg. Company of 111 Liberty street, New York, have brought out a Tabor indicator provided with their patented Houghtaling reducing motion. This motion is composed of a supporting base piece, K, provided with short standards that form bearings for the worm shaft R, on which the flanged pulley O is rotated, the outer bearing being a pivot, *p*, which receives the entire thrust of the shaft R, thus reducing the friction to a minimum. It is connected direct to the indicator upon the projecting arm that supports the paper drum B, and the teeth of the worm shaft R mesh directly with the teeth on the spool *g*. Connected to the base plate K is a spring case, *d*, and on the extreme end of the worm shaft R is a thumb piece, *u*. There is also secured upon this worm shaft, R, a collar not shown in the illustration, through which a clutch pin, secured directly to the thumb piece *u*, slides.

The flanged pulley O runs freely and independently on the worm shaft R, and has on its outside a clutch shaped hub. To this pulley is connected the actuating cord, which should encircle it a sufficient number of times to have its length when unwound a little more than equal the length of the stroke of the engine. The other end of the cord is secured either to the cross head of the engine, to a standard bolted to the same, or to any moving part that has an

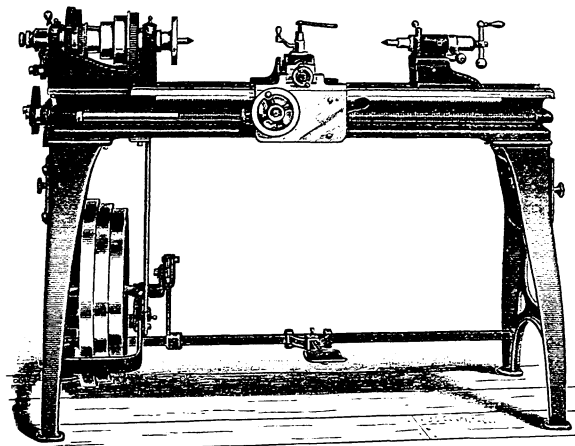
with a projecting pin on its under side to engage with a similar pin located in the top of the drum, and is to be used by the operator for moving the paper drum slightly forward when taking a diagram to prevent it from striking against its stop on the return motion.

The following directions explain the operation: First select a pulley whose circumference is from one-fourth to one-fifth the length of the engine stroke, so as to allow of its being revolved four or five times with each stroke of the engine. In placing this pulley on the main shaft R, after removing the clutch and its collar, care should be taken to have it set on the small projecting pin on the cover of the spring case *d*; then replace the clutch collar and clutch, pushing the collar on

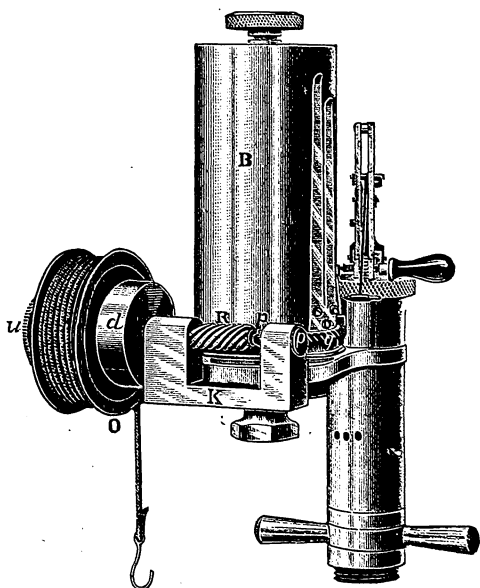
ing preferable. The stopping of the paper drum will not have any effect on the motion of the pulley O, which will continue to revolve independently while the engine is in motion. With the indicator is furnished for use on the reducing motion three different sized pulleys, which are of 1 inch, 2 inches and 3½ inches diameter. These pulleys are sufficient for use in taking diagrams from engines having length of strokes from 6 inches to 4 feet. Other sized pulleys are furnished when required.

The New Prentice Lathe.

This lathe was designed by Prentice Bros. of Worcester, Mass., for makers of electrical and astronomical instru-



THE NEW PRENTICE LATHE.



Tabor Indicator with Houghtaling Reducing Motion.

exactly similar motion, and must be connected in line from the pulley O.

Inclosed in the spring case *d* is a small plain spiral steel spring, which operates to return the pulley O back to its starting point after it has been revolved in one direction by the forward movement of the engine cross head. As this pulley O has an independent rotating back and forth motion on the worm shaft R, the necessity of unhooking the cord when the indicator is not being operated is entirely overcome. The paper drum B is rotated forward by means of the pulley O, through its worm shaft R engaging with the worm gear *g*, and in the opposite direction, or backward, by the action of its own retracting spring. On top of the paper drum B is a knurled thumb piece, made

to the shaft as far as it will go and holding it in place by the set screw. Next place the indicator in position and run out the loose end of the cord in a direct line with the pulley O to the point on the engine to which it is to be connected; then bring the cross head of the engine to the extreme limit of its backward motion and attach the loose end of the cord, being particular to have sufficient cord wound on the pulley to meet the extreme limit of the forward travel of the cross head, with one or two turns of the cord left on the pulley unwound. When the cross head, with cord connected, is at its extreme forward travel there should be just sufficient tension on the spring inclosed in spring case *d* to take up all the slackness of the cord when running, without overtaxing the spring. If upon starting the engine the cord should at first run unevenly on the pulley O, turn the indicator slightly until a perfect and uniform winding of the cord is obtained, which can always easily be secured. When pulley O is running motion to the paper drum B is obtained by pushing in the thumb piece *u*, to which the clutch pin is secured. When ready to take diagrams, after placing the paper on the drum B, it is first necessary to advance the drum away from its stop fully ¼ inch, which can be done by turning with one hand the knurled top thumb piece. While holding the drum in this position, with the other hand push in gently the thumb piece *u* to start the paper drum in motion. The motion of the paper drum B can at any time be instantly stopped for removing the diagrams taken and renewing the paper, by withdrawing the clutch thumb piece *u* or by turning the top thumb piece, the latter method be-

ments and jewelers' tools. It has a double back geared head similar to those on the larger sizes of lathes built by this firm.

The idea of this is to give more changes of speed to the spindle than can be obtained from the ordinary single geared system. In the single geared lathes six changes of speed are given, and there is a great difference in the speed after throwing in the back gears. This is overcome by using the double back gears. In the nine changes of speed there is an even gradation from the slowest to the fastest speed. These lathes are provided with a pedal for foot power or a countershaft for power; also with compound rest, plain rest or raise and fall rest. The lathes have hollow spindles. The tail stock has a set over for turning tapers. The lead screw is splined. The device for friction feed, used for turning, runs in the spline in such a way that the screw is not in the least particle worn, except in cutting screws. In amateur lathes the lead screw is used for both screw cutting and turning, and in a short time its accuracy is impaired to a great extent. In each leg is a receptacle, properly partitioned, in which can be kept the change gears, lathe tools and wrenches.

The principal dimensions are: Hole in spindle, 1½ inch; swing over ways, 11½ inches; swing over raise and fall rest, 6½ inches; swing over plain and over compound rest, 8 inches; distance between centers, 36 inches; weight, 600 pounds.

The Batopilas Mining Company of Chihuahua, Mexico, have placed an order for four iron buildings and four bridges with the Berlin Iron Bridge Company of East Berlin, Conn. These

buildings are to be shipped by steamer to Galveston, Texas, from there by rail to the interior of Mexico, where they must be carted a distance of 100 miles on mule back up into the mountains.

THE WEEK.

The new American steel sailing ship "Dirigo" sailed last week from Philadelphia for Hiogo, Japan, with the largest cargo ever carried by a vessel of her proportions. She takes 1,210,300 gallons of refined oil, valued at \$70,000. The arrival of the vessel at her destination will be awaited with interest, as she was constructed with a view to great speed.

The insatiable maw of the Standard Oil Trust has just made another gobble. Under its Western name of the Continental Oil Company, it has absorbed the Vacuum Oil Company of Denver, Col., who control the sale of two-thirds of the lubricating oil consumed in the West.

Queen Victoria will formally open the new Manchester Ship Canal on or about May 21.

Unimpeded telegraphic communication has been restored with Brazil.

The Ontario Bureau of Mines has received information of a discovery of tin ore which, it is claimed, has been made in the vicinity of Sudbury, Canada.

Early in May will begin the competitive tests of machine guns at the Indian Head proving grounds. Several types will be submitted, including the Gatling, Accles, Maxim, Gardner and others. From these weapons one will be selected for adoption in the naval service, in order to secure a uniform class of guns and ammunition for all the ships. At present two or three styles of machine guns are provided for the navy, there being no standard.

Returns of the mineral production of Canada for the year 1893 have just been issued. They show an aggregate value of \$19,250,000, or \$250,000 less than that of 1892. Nickel heads the list of metals, the output being 3,992,982 tons, valued at \$2,078,351. Gold was produced of the value of \$927,244; copper, \$875,864, and silver, \$321,423. The coal mined was 3,000,700 tons, valued at \$8 422,259; iron ore is placed at 124,702 tons, valued at \$298,018.

The steamer "Yorktown," which last week left the shipyard of the Delaware River Iron Shipbuilding & Engine Company, at Chester, Pa., better known as John Roach's shipyard, completes the last contract the company have on hand. A press dispatch from Chester states that the establishment is ready to close its gates for the first time in its history, unless new orders are soon received. A few years ago 1500 men found employment in Roach's works. To-day not more than 100 are on the pay roll. The depression caused by inactivity in the shipyard is much felt in the town of Chester.

Senator Cameron of Pennsylvania has introduced a bill at Washington to incorporate the Pennsylvania and New Jersey Bridge Company and to give the new corporation authority to construct and maintain a railroad bridge over the Delaware River between Philadelphia and Camden. The proposed bridge is to be constructed with a channel span of 500 feet, having a clear height at high

water of 40 feet and a draw span with a waterway of 125 feet.

President Diaz, on April 29, gave the finishing stroke to the 7 mile tunnel out of the valley of Mexico. The tunnel and canal have been in course of construction for many years, and will cost when completed about \$2,000,000. It is hoped that by this means the valley will be successfully drained, and all danger to the City of Mexico from inundation be removed.

The project to build a ship canal across New Jersey, giving Philadelphia a short outlet to the ocean, is making good progress and receiving the enthusiastic support of the leading business men of the Quaker City. A meeting to consider the scheme was held in Philadelphia on Monday, when plans were formulated and preliminary steps were taken.

Two important auction sales of woolen goods held in New York City last week proved very discouraging to the manufacturers. Some 12,000 packages of flannels and blankets were offered, valued at \$2,000,000, and the prices realized were from 15 to 40 per cent. below market rates. The lack of competition in bidding was said to be most marked.

The British Government allotment for reserve merchant cruisers, to be held at the government's disposal in case of war, is announced to be \$162,500 for the present fiscal year. The companies subsidized are the Cunard for the "Campania" and "Etruria," the P. & O. for four large vessels of between 6000 and 7000 tons, the White Star for the "Teutonic" and "Majestic," and the Canadian Pacific for their three 6000-ton steamers, the "Empress of Japan," "Empress of China," and "Empress of India." In addition, the Cunard Company hold in readiness three vessels, the "Umbria," "Aurania," and "Servia," the White Star, the Germanic, Britannic and Adriatic and the P. & O., 10 vessels of about 5000 tons each. Thus the government pays for 12 steamers and gets 16 free.

The present week witnesses the trials of the first two war vessels built at American navy yards for many years. These are the second class battle ships "Maine" and "Texas," the first named built at New York and the latter at Norfolk. The "Maine" will undergo her official horse-power trial and the "Texas" the dock trial of her engines. Both these vessels are built to develop 8500 horse-power, which, it is calculated, should give them an average speed of at least 15 knots an hour. It is not expected that the "Maine" and "Texas" will be ready for active service much before the end of the year.

The London *Economist* finds that a decided revival of business has begun in England. Although prices have declined 5 per cent., the values of exports are about on a par with those of last year, which they exceed in amount. Labor is more fully employed than at this season a year ago, the number of manufacturing establishments in operation is increasing, and reports from the chief industrial centers indicate a more hopeful feeling. Railway receipts, too, for the first quarter of 1894 were over 3 per cent. larger than those of the March quarter in 1893.

President Diaz, in his recent message, makes most encouraging statements in

regard to the development of the natural resources of Mexico, and his declarations are borne out by independent reports from the various provinces of the republic. The exports of coffee have largely increased since the first of this year, and the cocoa growing industry is shown to have made a very rapid advance of late.

The president of an English steamship company has, it is announced, placed an order in this country for the building of four large whaleback steamers.

Indications point to a larger winter wheat crop than the average. The outlook has improved since the beginning of the month, when the reports of the Agricultural Bureau were gathered.

The Canadian Tariff.

On April 13 the following changes and amendments were announced in the Canadian tariff:

Resolved, That the following articles shall be free of duty: Brass cups, being rough blanks for the manufacture of paper shells for cartridges, when imported by manufacturers of brass and paper shells and cartridges, for use in their own factories.

Brass, iron or steel rolled round wire rods over $\frac{1}{4}$ inch in diameter, and rolled copper rods 1 inch or under in diameter, when imported by wire manufacturers for use in making wire in their own factories.

Crucible sheet steel, No. 11 to No. 16 gauge, $2\frac{1}{2}$ to 18 inches wide, when imported by manufacturers of mower and reaper knives for the manufacture of such knives in their own factories.

Rolled iron tubes not welded, under $1\frac{1}{2}$ inches in diameter; angle iron 9 and 10 gauge, not over $1\frac{1}{2}$ inches wide; iron tubing, lacquered or brass covered, not over $1\frac{1}{2}$ inches in diameter; all of which are to be cut to lengths for the manufacture of bedsteads, and to be used for no other purpose, when imported for the manufacturers of iron bedsteads to be used for these purposes only in their factories until such time as any of the said articles are manufactured in Canada.

Steel for the manufacture of hammers, augers and auger bits when imported for the manufacturers of such articles for use in their own factories only.

Steel of Nos. 24 and 17 gauge, in sheets 63 inches long and from 18 to 32 inches wide, for the manufacture of tubular bow sockets, when imported by the manufacturers of such articles for use in their own factories only.

Steel strip and flat steel wire, when imported into Canada by the manufacturers of buckthorns, plain, strip fencing and safety barb wire fencing for use in their own factories in the manufacture thereof.

Steel wire, Bessemer, soft drawn spring of Nos. 10, 12 and 13 gauge respectively, and spring steel wire of Nos. 11 and 12 gauge respectively, when imported by manufacturers of wire mattresses to be used in their own factories in the manufacture of such articles.

The Tilghman sand blast process is now being used, instead of the planing machine, to clear armor plate of scale, and it is also applied to the ship plates required for torpedo boats. These plates are thus cleansed to receive the galvanizing or other work.

The Iron Age

New York, Thursday, May 3, 1894.

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GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.

RICHARD R. WILLIAMS, - HARDWARE EDITOR.

JOHN S. KING, - - BUSINESS MANAGER.

Machinery vs. Muscle.

Senator Peffer, in a recent speech in the United States Senate, advised workmen to strike and continue to strike until they obtained their share of the profits which manufacturers make through the introduction and use of labor saving machinery. This is the only way, he said, in which they can obtain their rights. The advice thus given is clearly superfluous, because workmen have been in the habit of doing this very thing. The honorable Senator points out no new method by which wages can be readjusted and chalks out no new course for the workingman to follow. His speech on the subject is merely of passing interest as an incident in this era of the use of labor saving machinery. The sentiment was uttered about the time that a prominent labor journal made mention of the fact that one electric power traveling crane just erected in the yard of a great steel works had displaced over 30 men, who were obliged to seek other employment. And concurrently a strike was in progress in a Western city against the use of machine made supplies in a certain craft which the outside workers thought the shop hands should be permitted to make, as had been the case in their trade from time immemorial.

The conflict between machinery and muscle, which has never been so active as at present, will continue to be waged, and machinery will encroach more and more on the domain of muscle. Men who delude themselves with the belief that they are economists and social scientists, and try to establish for themselves such a reputation among their fellow men, may foresee portentous consequences to the body politic in the never ending displacement of labor thus brought about, but they will not be able to check it. The genius of the American people finds peculiar development in this direction, and the movement advances whether times are bad or good. When times are bad and manufacturers are forced to economize they introduce more machinery to cut down costs, and when times are good and profits justify the improvement they introduce more and better machinery to enlarge their output and swell the returns on their capital invested. In fact, every influence seems to be actively at work to further the introduction of more

and more machinery. Strikes among workmen cause employers to seek some means by which they can displace manual with machine labor, partly because machines cannot strike and partly because they thus reduce the number of individual workmen with whom they have to deal. Inventors are also perpetually at work endeavoring to devise new methods of doing old things, and they find a fruitful field for the employment of their creative faculties in the application of machinery to perform something which they have always seen done by hand. In the introduction of such methods in farm work alone it is claimed that they have accomplished such important results that three farm hands properly equipped with machinery can do the work which was formerly done by 14 men.

Hardships may be suffered by some classes of workmen when they suddenly find themselves thrown out of work by the introduction of machinery. A man who has devoted years to becoming an adept in a certain branch of mechanical industry, but who knows nothing of any other trade, suffers severely when he is displaced by a machine. But in the march of progress individuals are not and never have been considered. If the welfare of a single man or a whole class of men is threatened by some change in trade, efforts may be made to break its force, but they are always fruitless. Everybody with even limited business experience can recall changes in fashions, in occupations or in amusements which have been suddenly brought about that have rendered valueless large stocks of goods carried by merchants, some of whom would then lose their entire capital. But the change in the humor or tastes of the people or the popular caprice could not be governed or controlled in the interest of any set of business men. And it is the same with those who toil with their hands to earn their daily bread. They are subject to the mutations and vicissitudes which seem to form a necessary phase of the uncertainties of human life.

The advice given to workmen, as recorded above, is bad. He is not the true friend of the toiler who recommends strikes. In such times as the present particularly, when discontent is widespread and dissatisfaction with existing conditions is ready to develop into unreasonable turbulence, those who occupy high official position should use whatever influence they possess and such power as may have accidentally fallen into their hands toward allaying ill feeling and promoting peace, concord and contentment. It is no time to talk about "obtaining a share of profits" when there are no profits. And as soon as good times return and manufacturers again enjoy reasonable returns on their capital invested we shall be very greatly mistaken if they are not among the first to raise wages who have been the most progressive in introducing labor saving machinery.

Our Consul at Swansea on American Tin Plate.

Our consular service has been so absurdly inefficient for so many years that American business men have long ceased to look for much aid in that quarter. A few of our consuls do send valuable reports relating to the commerce and industries of the district to which they are accredited, but, generally speaking, it takes a thorough knowledge of foreign business developments to pick the good material out of the mass of rubbish printed by the Department.

Humiliating as it is, American merchants and manufacturers have learned to accept any display of crass ignorance of foreign affairs on the part of our consuls. But forbearance ceases to be a virtue when our representatives do positive injury by an attitude directly hostile to American interests.

The Ironmonger's Chronicle publishes an interview with Dr. David Charles Davies, a Welshman, who, after 39 years' absence from his native country, returned there vested with all the glory and dignity of his post as American Consul at Swansea. He is quoted as having delivered himself as follows:

Asked why the Americans could not make tin plates, Dr. Davies replied: "I once asked that of an American friend, and he answered me by asking me another, 'Why is it that no other State or country but Beaumont City, in Kentucky, can manufacture Beaumont whisky?' And I gave it up. Of course, we were told during the Presidential campaign that they had been able to manufacture some tin plates in America, and Mr. Crenidher, the leading hardware dealer in Columbus, tried his best to get hold of some American tin plates during the campaign, but he failed to get them. I believe a lot of Welsh tin plates were palmed off on the public as American stuff during the election, and a lot of black plate has been sent out from Wales and dipped in America."

"But we heard of great industries that were growing up in Indiana, Ohio and Missouri?"

"All fake, sir; all fake! There is one, I believe, in Indiana which has been since closed. I more than suspect that some of the poor Welshmen who were imported from Cwmbwrla were returning on the 'Etruria' with me. There was said to be a works in Ohio which flourished during the campaign, and a procession was made of men displaying tin cups and other articles supposed to be of American make. But it was all untrue."

"The one in Missouri was supposed to be a huge affair, but in consequence of a bet the great industry was subjected to an inquiry, which showed that all the people employed were a boy and a girl, who were engaged in dipping the black plate imported from Wales. The cause of the failure to make tin plates in America is not the cost of labor. They can turn out the plates as cheaply, but they can't make them so good. After 48 hours' use or so the tin begins to get rusty. Why, I was on the 'Etruria' with Mr. Edmunds of Newport, another Welsh-American, and we saw them chuck overboard their tin utensils, which were useless after the voyage. Mr. Edmunds is a strong Republican, and did not much relish my remark, 'Why, there goes your McKinley tin.'"

"So you think there is a chance for the Welsh tin plate trade yet?"

"Yes, I guess there are fine times ahead of it. Hardware dealers all over the States

say their customers will not have anything but Welsh tin."

A man so ignorant and prejudiced is a disgrace to the country. His recall should be immediate.

Beauty in Machine Design

While utility must always be predominant in the design of any machine, nevertheless its grace and beauty should receive careful consideration. The past few years have witnessed a radical departure from the old time molded and carved designs to plain, smooth surfaces, large fillets, rounded edges and heavy flanges. Gingerbread work is out of style in machine as in house construction; strong outlines indicative of purpose and solidity now rule in the most advanced, and to a large degree also in all ordinary machine designs.

The subject, however, is still under discussion, and as in all things else in art or science there is an old and a new school. In no common tool has the general change been more noticeable than in the lathe. Twenty-five years ago—and indeed far less in some concerns—scarcely a lathe bed could be found that was not made up box like with panels and fancy molded fillets, corners square, and altogether rather a piece of cabinet work than an example of machine construction. Head and tail stocks were of the same order, the legs perhaps graceful in outline, but of architectural rather than engineering design. To-day our lathe bed is smooth surfaced, round cornered, with heavy fillets, the head stock and the tail stock are substantial in appearance without unnecessary embellishment, the legs of an order to give confidence in their stability.

To-day the manufactured articles of a given house may frequently be as easily distinguished as may the paintings of different well-known artists. There is something distinctive about them. Perhaps it may be the generous introduction of cored rather than flanged frames, as with the Sellers tools, or the practical presentation of a ruling principle of design, as in the straight line engine. Poor design and incapacity is best evidenced by the attempts to copy such distinguishing features without a clear appreciation of their utility. Thus the base that is best for a shaper or milling machine may be entirely out of place when applied to a lathe.

Along this line there has recently appeared in some of the mechanical papers a series of letters from practical men touching upon the principles governing in certain classes of machine design. Whether the lathe leg shall take the form of that portion of the anatomy of a horse or shall give greater floor support by being patterned after the leg of a duck has been discussed pro and con. Whether two fox-like heavy supporting legs, one on either end of the lathe, are preferable to the four ordinarily provided, or whether three legs may not be better still, yet

remains a disputed question. Only relative experience and careful investigation will ultimately settle such questions.

It is certain, however, that the strains, due to the work being done, which occur in every machine are even now only partially understood, and present success is in large degree a result of a cut and try process and not one of intelligence and comprehensive designing. It is often astonishing to see how little metal, when properly distributed in webs and flanges, is necessary to secure the required stiffness or strength. This is clearly shown in beds for engines, dynamos and the like. Mere material is not strength, and its proper distribution in open flanged work should no more mislead one into regarding it as weak than a fat man should, merely because of his size, be an indication of physical prowess.

Certainly strength and utility should never be sacrificed to beauty, but there is no reason why the composite effect of a machine should not be more carefully studied from an artistic standpoint, just as one of the hoped for results of the World's Fair is that the American public may, at no sacrifice of strength, incorporate in its structures the elements of beauty that shall please the eye and elevate the mind. To this end the frame, above all other portions of the machine, should receive careful attention in its outlines. If it serves as a support, let it be cored and have a smooth and massive outer appearance; if it is employed merely as a frame to support light shafts and the like, let it likewise be light in appearance, ribbed and flanged and gracefully outlined.

It is frequently the case in a design of this character that symmetry would add greatly to its effectiveness. If so, there certainly can be no logical objection to introducing extra ribs or flanges that will have an appearance of utility while in fact only serving to give a symmetrical outline. In this manner the architect introduces superfluous and actually artificial columns or beams to symmetrically balance those necessary to the strength of the building, or he so incloses a hot air flue or a soil pipe as to give the finish an appearance of necessity in the construction of the building.

Just how grace in outline may be secured under all conditions the artists will have to tell us, but every capable engineer and designer has at least a fair idea of the rudiments of beauty in design. One practical man has suggested that the back of a horse furnishes the principle to be applied in all curved work—that is, that the true ogee curve formed by the intersection of arcs of circles at points upon their circumference cut by lines joining their centers, as commonly applied in machine design, should give way to arcs of circles joined by short straight tangential or slightly curved lines. For thus along the back of the horse is practically a short straight line joining the graceful

curve of the neck and that of the flank. There is, after all, more in this feature of curved lines than would at first appear, and while the ogee has its place it should not be applied in all cases of joining circular arcs. As a rather interesting illustration of the effect produced by accepting the back of the horse as a model, it may be related that an engineer, who was likewise a lover of good horseflesh, characterized one of the engines designed by the promulgator of this idea as reminding him of a full bred Kentucky steed.

Convenience to the operator should stand out as one of the important features of any machine design to receive the most careful attention. It is not a mere matter of arranging handles and knobs so that the knuckles will not be skinned in the use; of placing the stripper or treadle within the reach of a seated operator, or even of making the parts accessible for repairs. In fact, it becomes a matter for serious study in a machine that is to be operated by continuous movement of the operator. Then his every movement must be considered, and as in the preparation of a font of type, arrangement must be made whereby he may accomplish the most work with the least expenditure of physical force. Such careful consideration has been given, for instance, in the design of the typewriter, the "linotype" type-setting (or rather making) machine and to a lesser degree in small turret lathes, screw machines, gang drills and the like, where there is constant repetition in the movements of the operator.

No books can teach such designing; it can be learned only in the school of experience, and even then can be properly applied only by those who have an innate, a kind of intuitive knowledge of the requirements and the means by which they may be best fulfilled.

The Engineers' Club.

The fifth anniversary of the Engineers' Club of New York was celebrated with a reception at the club house, 10 West Twenty ninth street, on Saturday last. The club has been very successful, its membership, including all branches of engineering, having risen to about 675, of whom about one-half are resident members. The guests were received by a committee consisting of past presidents and past vice-presidents and of the present board of management, John Stanton, well known in connection with the Lake Superior copper industry, being the president. About 150 members and guests were in attendance, among whom were James A. Burden of Troy, N. Y., and Charles Macdonald, past presidents; Henry R. Towne of Stamford, Conn.; John Fritz, Bethlehem, Pa.; S. W. Baldwin, Pennsylvania Steel Company, New York; W. H. Wiley, G. W. Bramwell, secretary of the Engineers' Club; G. W. McNulty, W. H. Fletcher of Hoboken; Foster Crowell, J. C. Kafer, O. F. Nichols, John Thomson, Prof. James E. Denton and Prof. Webb of Stevens Institute; Prof. R. H. Thurston of Sibley College, Ithaca, N. Y.; Clark Fisher, John H. Banks, A. L. Beebe, W. G. Berg,

Harvey S. Chase, F. Collingwood, secretary of the American Society of Civil Engineers; H. Cushman of Edward Corning & Co., New York; E. M. C. Davis, James Douglas of the Copper Queen Mining Company, A. J. Frith, C. E. Hewitt of Trenton, N. J.; D. L. Hough, Charles Warren Hunt, F. R. Hutton, secretary of the American Society of Mechanical Engineers; G. A. Just, W. Kent, C. Kirchhoff, Charles H. Loring, George W. Maynard, J. F. O'Rourke, H. De B. Parsons, H. N. Montgomery, W. H. Bailey, Charles Raht, A. Pollock, H. B. Roelker, Horace See, W. G. Triest, C. M. Wales, H. L. Waterman, E. V. D'Inwillers of Philadelphia, G. Lewisohn of Lewisohn Bros., New York; R. M. Thompson, Oxford Copper Company; G. W. G. Ferris, the builder of the wheel; A. L. Griffen of the Keystone Bridge Company, Pittsburgh; Col. E. D. Meier of St. Louis, Chas. T. Schoen of Philadelphia, E. G. Spilsbury, Trenton Iron Company, Trenton, N. J., G. H. Blaxton of Pittsburgh, Pa., and Percival Roberts, Jr., of Pencoyd, Pa.

OBITUARY.

BIRDSILL HOLLY.

Birdsill Holly, inventor of the Holly system of water works, died at his home in Lockport, N. Y., April 27. He was born in Auburn, Cayuga county, N. Y., October 8, 1820. He received a common school education and then worked at general mechanics and as millwright. After becoming an expert in all kinds of general mechanical work he went to Uniontown, Pa., where he first became superintendent and afterwards proprietor of a large machine shop, which he conducted for a number of years. He then returned to Seneca Falls, N. Y., where he became a member of the manufacturing firm of Silsby, Race & Holly. They produced hydraulic machinery. In 1859 he removed to Lockport, where he resided until his death. He gave his time to the inventions which have made his name far known. He invented a chain stitch sewing machine which had a large sale. He invented and perfected over 150 devices. Some of these in machinery were bought in Europe, where they are now manufactured. But the invention with which his name will always be identified is that of the Holly system of water works. The builders of the systems of engines and pipes, the Holly Mfg. Company, organized in 1859, have now a capital of \$1,000,000, employ 500 men, and their works occupy over two blocks in Lockport. They have already placed their system in over 2,000 towns and cities of the United States and Canada, where it is now in successful operation.

C. C. MERRITT.

C. C. Merritt, one of the family who for a year owned the Mesaba Range, died at Duluth, Minn., on the 27th ult. He had never recovered from the strain imposed during the negotiations where the control of the range was in question. The immediate cause of his death was heart ulceration.

JAMES YOUNGER.

James Younger, consulting engineer of Cramp's shipyard, died suddenly of heart trouble on April 27, at his residence, 4773 Germantown avenue, Philadelphia, at the age of 50. Mr. Younger was born in Fifehire, Scotland, and was educated at St. Andrew's College, with the view of entering the East Indian civil service. His tastes had al-

ways, however, inclined to mechanics, and after graduation he abandoned the civil service course and entered the machine shop at Elder's shipyard (now Fairfield's), being subsequently transferred to the drafting department, where his rise was rapid. Coming to the United States in 1872, he at once entered the service of the Cramp Shipbuilding Company and was quickly advanced to the position he held at the time of his decease. He had few equals in the profession of mechanical engineering, and was, in addition, a man of wide general reading, a vigorous writer and an effective speaker. Personally he was most amiable and genial, esteemed and liked by all who knew him.

CHARLES PEACE.

Charles Peace died in Worksop, Nottinghamshire, England, on the 14th ult., in the seventy-first year of his age. After finishing his education Mr. Peace joined his father and his brother, W. K. Peace, in business. His father died in 1848, and the business was continued by Mr. Peace and his brother under the style of W. K. & C. Peace. On the death of his wife, in 1853, Mr. Peace decided to come to New York as the representative in this country of his own firm, which was already well known in the United States. His kindly, generous nature and sterling honesty soon secured for him a hold on the affections and respect of all with whom he was brought in contact. His friends were to be found in every large city and State in the Union, and in old times, when it was the custom of all the principal hardware houses of the South and West to send their buyers twice a year to New York to make arrangements for the following season, the inevitable visit to "Charley Peace" was always looked upon as one of the pleasures of the trip. In 1861 he was appointed agent for Joseph Rodgers & Sons of Sheffield, and under his care and management the business on this side enjoyed an almost uninterrupted season of prosperity. He continued the representation of these two concerns until 1875, when failing health compelled him to resign, and he returned to his old home in Sheffield, thinking that his native air would be less trying to his asthmatic trouble than the climate of New York. His expectations in this respect were fully realized, and he thoroughly enjoyed the life of leisure he led up to within the last two years, when his health again failed him, and thinking that a change to Worksop would help him, he went to that place. Again the change of air seemed beneficial, and Mr. Peace bought a house with a view to making Worksop his permanent home, but in moving into his new residence he took cold, which rapidly developed into bronchitis, and brought to an end a life which had been peculiarly full of kindness, charity and good works.

The Cramps have addressed a letter, under date of April 1, to the British Admiralty asking for an opportunity to make tenders for the construction of two or more of the proposed new ships for the English navy. Charles H. Cramp expressed the opinion, however, that public opinion in Great Britain would not uphold a ministry in awarding work to any foreign shipyard.

The government torpedo testing grounds at Newport, R. I., were reopened on Tuesday. A number of torpedoes of the Whitehead and Howell types are awaiting their final trials.

Washington News.

(From our Special Correspondent.)

WASHINGTON, D. C., May 1, 1894.

The Tariff.

The pressure of industrial exigency, supported by an overwhelming public sentiment, is rapidly driving the tariff situation in the Senate to a crisis. This condition, however, is not likely to eventuate in anything immediate regarding action, but it is expected to foreshadow the future policy of the majority and possibly that of the minority as a sequence of the former.

The challenge of Senator Aldrich to a vote on the House bill, pure and simple, caused a ripple of excitement in that usually serene body. The consequential effect of the parliamentary badgering which passed was to bring out certain phases of the situation which were previously but vaguely understood. The opposition of a fraction of the majority was emphasized by the under current of contention in secret conferences.

The attention which the President has been giving the subject of late has shown the seriousness of the situation as he views it, not so much from a political as from an economic standpoint.

The disposition to materially modify the measure in certain features is entirely the work of the President, as the managers of the bill like Senators Voorhees, Harris and the ultra class are very reluctant about accepting any modification whatever, so that what they finally determine to do will be to favor the wishes of the administration and not as a free will offering in the way of harmony and compromise from themselves. The unfortunate part of all the dickering which is now going on is that the idea of the unification of the majority is based upon the belief that the material modification of the bill as it came from the House relates to income tax, sugar, coal, iron, ore and such items, and does not include the vast range of manufactures of iron and steel.

It is yet an open question whether Mr. Voorhees can unite the majority on that line. Senators Hill and Murphy go further than that. Senator McPherson would like to, but between party fealty and re-election he has two horns of the dilemma to decide between. The minority have no idea of quietly submitting to a solution simply to consolidate the majority without some recognition of the interests of industry and labor. The debate meanwhile will go on and developments may be expected from day to day until some solution shall be reached if practicable. Any attempt to force a vote in violation of the usages of the Senate will hardly be accepted by the full strength of the majority, as the uncertainty of the future in the arrangement of members in the Senate makes such a precedent a matter of more than passing moment. Senators Aldrich and Allison do not think that the more sagacious leaders of the majority will be willing to embark in such a project.

It was stated in *The Iron Age* when the House tariff was reported to the Senate and had been carefully examined by the Senators that a consensus of opinion was that it would never become a law in that form. The iron and steel and other staple industries of the country can now rest assured that the statement referred to is more certain of reali-

zation than it ever was. It now can be added for the benefit of the readers of *The Iron Age* that the passage of a modified bill will depend upon the size and character of the modification. If it simply covers an agreement on the income tax and the industries affected by the ruinous rates in the revised schedules and the increase of the free list, no such bill will be permitted to pass if 38 Senators, human endurance and the parliamentary customs of the Senate can prevent such a direful consummation. The minority are not disposed to be excessive in their demands for a protective rate in the bill. They are inclined to concede that some items can stand a slight shave without injury to the industry or the protective principle.

There are several propositions in the Committee on Finance upon which the majority can consider a fair increase of the rates on manufactures under the metal schedule which would be satisfactory without being excessive. An effort will be made to apply them in the Senate in the discussion of the schedules if the committee does not adopt them. They now have about 400 amendments proposed to the bill.

The Armor Trouble.

No one can properly realize at the moment the incalculable injury done by the disclosures in regard to the character of some of the armor plate turned out by the Carnegie plant and the methods alleged to have been resorted to in order to increase the quality of the test plates above that of the group to which they belonged. The Secretary of the Navy has been giving the subject the most careful attention. He has been gathering all the information possible on the subject. He is now convinced that the allegations of further irregularities are sufficiently grave to justify him in continuing his investigation on a broader scale. Commodore Sampson is heartily in earnest in this work. It was upon his recommendation that the Secretary favored a fine of 15 per cent. and loss of premiums paid on plates manufactured between the dates named, but which was lessened upon an appeal to the President.

The fact that the Department is willing to enter again into an investigation not only of the Carnegie output under the contracts, but also of armor piercing shell, indicates that he considers the new information received as entitled to sufficient credence to warrant investigation.

The greatest indignation is felt in the Department that the methods of a great steel producing firm should make such things possible. It places the entire new navy under suspicion of not being up to the standard of defensive qualities which the tests developed. It also furnishes material for the croakers in Congress who think it statesmanship to antagonize such a great national enterprise as building a navy for the protection of American commerce.

The Secretary is very reluctant about conversing on the subject. He says: "It is a very unfortunate thing for the navy that such allegations should have been sufficiently plausible to make an investigation possible. No one can tell how much it may embarrass our work in the future. But the extreme penalty should be meted out to the offenders if we find them guilty as alleged."

Reinhard Mannesmann, Sr., file and steel manufacturer at Remscheid, Germany, died last Friday, aged 80 years. He was the father of the inventor of the famous method of tube rolling.

MANUFACTURING.

Iron and Steel.

The plant of the Slatington Rolling Mill Company, Slatington, Pa., manufacturers of merchant bar iron, was idle last week, the puddlers refusing to work for \$2.70 per ton.

Belmont furnace, plate mill and nail factory of the Wheeling Steel & Iron Company, Wheeling, W. Va., are in full operation, as is also the sheet mill of the Wheeling Iron & Nail Company, belonging to the same firm.

On April 27 Carnegie Brothers & Co., Limited, of Pittsburgh, recovered a judgment of \$30,000 at Circleville, Ohio, against the Lancaster & Hamden Railroad. The road was to be advertised and sold by the sheriff unless the judgment was paid within five days from the above date.

At the Albany Iron Works, Troy, N. Y., last week the forging hammer in the water mill, the 14-inch train and the puddlers in the steam mill were working.

The puddlers at the Albany, N. Y., Iron Works were obliged to stop work the evening of April 25 as the supply of ore had become exhausted. The plant was idle several days thereafter. The puddlers had only been working three weeks.

An additional number of the Moxham rail straightening machines, a very ingenious and effective device, are being put into the works of the Johnson Company, at Johnstown, Pa.

The Minneapolis Rolling Mill Company of Minneapolis, Minn., have decided not to postpone the completion of their works any longer and have ordered their machinery to be forwarded from Pittsburgh, where it has been held for some time awaiting shipping orders. It will be installed at once, so that manufacturing operations may be started at an early day.

The Reliance Wire & Iron Works of Milwaukee, Wis., have been sold to George H. Norris. The price paid is reported to have been \$30,000. Mr. Norris was formerly connected with the works as secretary. His interest was purchased about one and a half years ago by F. A. Hall, who was president of the company when they failed. Now Mr. Norris returns as sole proprietor. The works were sold to D. D. Williams about three weeks ago, but he did not intend to continue as proprietor and has been looking for a buyer ever since.

The Kansas City Steel & Iron Company, Kansas City, Mo., have recently been organized with a capital of \$350,000. Work will be started in the plant immediately, and it is expected it will be in operation very shortly. They will manufacture steel by the Cline process, which is said to be peculiarly adapted for machine tools, car couplers, &c. They will also make mining machinery. The officers of the company are: F. Burley Johnson of Topeka, president; S. H. Springer of Des Moines, secretary, and J. R. Cline of Kansas City, general manager.

The American Steel Foundry Company have been incorporated in Granite City, with a capital of \$300,000, fully paid. This company will immediately begin the erection of their works in Granite City, which will be completed about August 1. The main building will be 400 x 175 feet, which will be used for their foundry, and there will be other buildings of smaller dimensions for pattern shops, gas plant, &c. There will be in operation three open hearth furnaces, each of 15 tons capacity. The company will make the American steel truck and automatic car coupler, for freight and passenger cars. The company are owners of valuable patents for casting steel, which is expected to put them in the front rank of the steel castings trade. Both the acid and basic processes will be used. The officers of the company are: President, Rolla Wells; vice-president and general manager, E. F. Goltra; secretary and treasurer, L. J. Hayward. The St. Louis office of the company is located in the Wells Building.

As an illustration of the marked improvement of furnace practice in the South, Rogers, Brown & Co., selling agents of the Tennessee Coal, Iron & Railroad Company, send us the following memorandum of the work during March of the newly started Sewanee Furnace, at Cowan, Tenn. April will show even a better record. Considering the equipment of the plant and character of the ores and fuel the record is noteworthy. The product was 3656 tons

during 27 days blast, making an average per day of 135 $\frac{1}{10}$ tons. It graded foundry, 92 $\frac{3}{10}$ per cent; mill, 79 $\frac{7}{10}$ per cent. The ore yielded 50 per cent. The limestone consumption was 0.67 ton per ton of iron. The yield of the total burden was 377 $\frac{1}{10}$ per cent. (ore and stone). The coke consumption was 2400 pounds coke per 2268 pounds iron.

A press dispatch from Sharon, Pa., says that if the coal and coke strike continues three weeks longer every wheel of industry in that city will be stopped. The Claire and Mabel furnaces, at Sharpsville, have dampened down and the Westerman Furnace, Sharon, Spearman, Alice and Douglas, which contemplated resuming last week, have abandoned the idea. Twelve furnaces there and at Sharpsville and Mid-dlesex have received word from the coal and coke suppliers that it was an impossibility to furnish them with stock until the strike was settled. All the mills and foundries have received the same notice.

At a meeting of the stockholders of the Bass Furnace Company of Rock Run, Ala., J. H. Bass was elected president, J. I. White secretary and F. S. Lightfoot treasurer.

The Pottsville Iron & Steel Company of Pottsville, Pa., are now operating their works on full time with a complete force of men. The plant has been working very irregularly during the past year.

The owners of the Frankford Steel Works, located on Frankford Creek, Philadelphia, are contemplating the removal of their entire plant to the West, and are now in negotiation with parties to this end. The city of Philadelphia proposes to run a street through the present works, and if this intention is carried out the property will be so divided as to be no longer adapted to the business of its owners.

Owing to the scarcity of coke Furnace A of the Monongahela Furnace Company, McKeesport, Pa., has been blown out for repairs, which will be proceeded with at once and the furnace put in condition to blow in again as soon as possible. Furnace B has been banked, but will be put in blast again as soon as a supply of coke is assured.

The 28-inch mill at the Homestead Steel Works, Homestead, Pa., has been completed and will be tested during this week, and if this test is satisfactory it will be started in full operation. The erection of this new mill will throw 14 men out of employment on the two turns—one pull-around, two tongmen, two cover pullers and two men in the stocking gang on each turn.

A local newspaper states that it is learned from a reliable source that the large anthracite blast furnace at Cornwall, Pa., will resume operations when the improvements now in progress are finished. By the improvements now going on the capacity of the furnace will be doubled. It is proposed that the active management shall be assumed by Robert H. Coleman.

A meeting of the stockholders of the Wellman Iron & Steel Company of Thurlow, Pa., was held in Philadelphia on the 25th ult., when reports showing the condition of the company's affairs were made and other business was transacted. The following Board of Directors was elected: John P. Crozer, S. A. Crozer, George K. Crozer, G. W. Knowles, G. W. Nelson, William Burnham, John Conners, S. T. Wellman, Richard Peters, Jr. The board organized by electing S. T. Wellman president and Richard Peters, Jr., secretary. Notice was given at the same time that the mills would close down on the following Saturday on account of lack of orders.

Topton Furnace, at Topton, Pa., has closed down after a long and successful blast.

It is stated that Ella Furnace, owned by Pickands, Mather & Co. of Cleveland, and situated at West Middlesex, Pa., will blow in as soon as repairs have been completed. It has been idle for two years. Alice Furnace, at Sharpsville, owned by the same company, will also resume, it is said, as soon as improvements approximating \$20,000 are made.

The Claire Furnace Company, Limited, of Sharpsville, Pa., have blown in their furnace.

The furnace of the Boiling Springs Iron Company, at Boiling Springs, Cumberland County, Pa., has just blown in on strictly cold blast charcoal pig iron, for car wheels, chilled rolls and castings of special strength. Cuban ores, low in sulphur and phosphorus, are being used as a basis. The first analysis showed the following result: Iron,

96.856 per cent.; sulphur, 0.022 per cent.; phosphorus, 0.020 per cent.; tensile strength, 32,000 pounds.

Isabella Furnace, at Wyebrooke, Chester County, Pa., blew out on the 16th ult., having used up the stock of ore and the condition of the charcoal iron market not warranting the purchase of additional stock.

The furnace of the Pulaski Iron Company, at Pulaski City, Va., is out of blast temporarily, but will resume operations in two weeks, orders for 11,225 tons being on hand.

Machinery.

The plant of the Hydraulic Machine Company, at Pittsburgh, Pa., manufacturers of rolling mill machinery, has been put in operation to nearly full capacity.

The Spicer Mfg. Company, New Philadelphia, Ohio, recently made a shipment of 25 special trucks to the Caldwell & Peterson Company, Wheeling, W. Va.

The Leechburg Foundry & Machine Company of Pittsburgh, with works at Leechburg, Pa., are turning out a large amount of rolls and tin plate machinery. Among recent shipments made by this firm was a Mesta patent pickling machine to the Canonsburg Iron & Steel Company, Canonsburg, Pa., two doubling shears and one Mesta patent squaring shear to the Cumberland Steel & Tin Plate Company, Cumberland, Md.

One year ago April 6 the Marion Gray Iron Foundry Company of Marion, Ind., took off their first heat and since have been doing a very successful business. The firm are composed of M. F. Gartland, J. F. Digan, J. H. Schaumleffel and S. Crowl, all being practical men. They do general jobbing work of all kinds in light and heavy castings. They have been running every day during the panic.

The Cincinnati, Georgetown & Portsmouth Railroad are now building new shops at Columbia, Ohio, and have closed a contract with the Lodge & Davis Machine Tool Company of Cincinnati, Ohio, for the entire equipment of machinery, including boilers, engines, planers, lathes, drill presses and shapers, &c.

The new boiler house of the Burden Iron Company, Troy, N. Y., has been completed. The ten boilers are now being made at Pinkerton & Mull's, Green Island, N. Y.

D. R. Wing & Co., operating a large foundry and machine shop at Little Rock, Ark., and the Arkansas Machinery & Supply Company, an identified interest, failed on the 23d ult., and C. E. Rosenbaum was appointed receiver. Their indebtedness to preferred creditors is about \$35,000. D. R. Wing & Co. had been in business for some 20 years and occupied a high position in the trade of the Southwest.

The residents of Rome, N. Y., are encouraged with the prospect, as the plant of the Rome Locomotive Works, which was destroyed by fire on the night of December 4 last, is to be rebuilt. At that time the blacksmith shop, boiler shop, machine shop and engine room were destroyed. All these buildings were one story, except the machine shop, which was two stories. The side walls of the buildings were left substantially intact, and repairs and roofing will be all that is necessary. At the time of the fire the large carpenter shop was saved, and this has been and will be utilized for a machine shop for some time. Men have been at work on the debris for some time, and some of the machinery has been recovered from the ruins and repaired. There are now 50 men on the pay roll, and considerable locomotive repair work has been done in the carpenter shop during the winter. All the restored buildings will be one story, including the machine shop, which will be rebuilt. The rejuvenated works will not be given up entirely to locomotive work, but will be adapted to general machine work, especially the heavier kind, such as engine repairing. It is expected that by midsummer the buildings will be in readiness and the machinery in position. The Rome Locomotive & Machine Company, who have succeeded the New York Locomotive Works, have paid off the \$150,000 mortgage of the last named concern, which they assumed, and have issued a new mortgage of \$75,000.

The machine shop of W. H. Terwilliger & Co., at Amsterdam, N. Y., was destroyed by fire April 24. It is estimated that the loss to Terwilliger & Co. will be nearly total, covered by \$7000 insurance. The firm intend to secure temporary quarters at once.

The National Lathe & Tool Company of Philadelphia, Pa., have asked the business men of Cohoes, N. Y., what inducements will be offered them to locate their manufactory at the latter place.

The Empire Foundry, at Troy, N. Y., made a cast last week, and the Clinton Foundry, in the same city, started Monday, with an additional force of employees.

Page's Foundry, on Liberty street, Albany, N. Y., is at present very busy making all descriptions of iron work for cars, locomotives, &c.

The Albany Steam Trap Company, Albany, N. Y., are doing a thriving business, making all kinds of specialties used in connection with steam power. The concern manufacture automatic steam pumps, valves, steam traps, governors, and every device required by users of steam.

Baker & Shevlin, Saratoga Springs, N. Y., have just turned out a fine lot of machinery for the Hudson River Pulp & Paper Company of Palmers Falls, N. Y. It includes two improved suction screens and one vibrating screen. They are also ready to ship to the D. & W. Pemble Paper Mill Company of Stillwater, N. Y., a large winding reel, together with the auxiliaries. They also shipped this week to the Manayunk Paper Company of Philadelphia a Baker & Shevlin patent suction screen. Aside from this they have numerous boilers to make and three contracts for steam heating plants. Their plant at Schuylerville, N. Y., too, is in full operation and has much work to do for the mills in that section. An inspection of the shop at this time is very interesting. The firm have just purchased about \$7000 worth of new machinery, including a huge improved open side planer, which alone cost \$3000, and a number of new shapers, lathes and overhead drills. The force of employees will soon be increased.

C. M. Giddings, who has been for the past six years in charge of the Sioux City Engine Works, has recently connected himself with The Brownell & Co. of Dayton, Ohio, manufacturers of boilers and engines. They have bought the exclusive right to manufacture under his patents and have established a Department of Engineering under the supervision of Mr. Giddings as superintendent. The Brownell & Co. will make a specialty of high grade automatic engines, both simple and compound, and have purchased the entire stock of drawings, patterns, finished and unfinished automatic engines of the Sioux City Engine Works. These engines are known in the trade as the Russell single valve automatic. The Brownell & Co. have recently added to their boiler shop equipment a set of 20-foot rolls 18 inches diameter, capable of rolling the heaviest plate and making 20-foot boilers in two sheets.

Work has been begun by the Phoenix Iron Company of Phoenixville, Pa., upon the skeleton iron structure of the new machine shop which is now being built by the Schenectady Locomotive Works, at Schenectady, N. Y.

The Paige Tube Company, at Warren, Ohio, have issued bonds aggregating \$250,000 for the enlargement of their business and a trust mortgage for that amount has been executed in favor of Charles Baird of Akron.

The New Haven Mfg. Company, New Haven, Conn., makers of machine tools, have posted a notice that hereafter the shops would run 42 hours a week, and that a reduction in wages of 15 per cent. would be made.

The lockout of the employees of the Griffing Iron Works, Jersey City, N. J., continues, with no prospects of a settlement in the near future.

The Loraine Machine Company of New York City were incorporated on April 26, with a capital of \$1800. The directors are Jerome Bradley, Wm. A. Earle and Henry H. Fefel.

Snell & Meharg's machine shop, at Hamburg, Pa., has been burned, together with 14 completed engines and the equipment of machinery. The loss is reported to be \$50,000.

A receiver has been appointed for the Poplar Bluff, Mo., Foundry & Machine Company.

At Pittsfield, Mass., E. D. G. Jones, Sons & Co. will replace the machine shop recently burned by a new brick three-story structure 79 x 68 feet in size.

North Bros. & Co. will erect a three-story foundry at American street and Lehigh avenue, Philadelphia.

The Cordele Machine Shops, recently burned at Cordele, Ga., will be rebuilt on a more extensive scale.

The Laconia Car Works, at Laconia, N. H., contemplate enlarging their malleable iron foundry, having found that department of the business a profitable one. It is possible that a steel casting department may also be established in connection with the other plants.

Marsh Brothers' foundry, at Sandy Hill, near Snoddersville, Pa., has been burned. The firm manufacture boilers, engines and agricultural implements, besides conducting a regular foundry business.

The general foundry of the Mellert Foundry & Machine Company, Reading, Pa., has resumed operations after an idleness of six months, giving employment to over 100 men.

The foundry and machine works of Thomas Sharp & Co., at Salem, Ohio, have been completely destroyed by fire. Loss, \$30,000; no insurance.

The machinery department of the Reading Foundry, Reading, Pa., has gone on double turn.

Maris & Beckley of Philadelphia are engaged on the construction of a 4-ton traveling crane and two 2-ton trolleys for the Newcastle Steel & Tin Plate Company of Newcastle, Pa. They are also building two 2-ton pneumatic cranes for the new plant of the Consumers' Ice Company, Philadelphia. This will be the first traveling crane for operation by compressed air built by the firm.

Upon the application of Edward P. Morse, who is associated with James McCaldin and Robert McCaldin in the Morse Iron Works Company, at Twenty-sixth street, Brooklyn, N. Y., John B. Shanahan has been appointed receiver of the company by Judge Gaytor of the Supreme Court. According to the statement of Morse the liabilities of the company are \$35,234 and the assets \$8000.

Hardware.

E. C. Stearns & Co., Syracuse, N. Y., in connection with their plant, in which a large variety of goods are manufactured, have a large foundry equipped in the best manner and are in excellent position to furnish gray iron castings for other manufacturers.

Avery Stamping Company, Cleveland, with their extensive and well equipped plant, advise us that they are in a position to do all kinds of tinning and retinning of steel or copper and, in fact, all metals. The company will be pleased to furnish estimates to any one desiring to have tinning or retinning work done in large quantities.

The Motor Bicycle Company have been organized at Battle Creek, Mich., with a capital stock of \$25,000, to manufacture bicycles. W. C. Smith is president, W. C. Sanford vice-president and treasurer, and J. N. Reid is secretary.

Spicers Mfg. Company, New Philadelphia, Ohio, advise us of the shipment on the 20th ult. of 25 special trucks to the Caldwell & Peterson Company, Wheeling, W. Va.

E. J. Martin, manufacturer of fish lines, Rockville, Conn., will soon commence the erection of a two-story addition to his plant. The building will be 32 x 68 feet, and will be fitted up with the latest improved machinery.

Chantrell Tool Company, Reading, Pa., are contemplating the erection of a three-story building, 60 x 150 feet.

The Indiana Wire Fence Company of Crawfordsville, Ind., have decided to make important improvements in their plant. They will erect a two-story brick building, 56 x 63 feet, in which they will install a number of new machines. They will also replace their frame warehouse with a larger warehouse, 140 x 127 feet, to be of brick and one story in height. When the new machines are in readiness for operation the company's capacity will be double the present rate of output. Their enterprise is the subject of much rejoicing by the citizens because employment will be given to a larger number of hands.

Anthony & Cushman Tack Company, Taunton, Mass., who have recently again engaged in the manufacture of tacks, are now running full time, giving particular attention to upholsterers' tacks. The firm of Anthony & Cushman entered the tack business 26 years ago and ran constantly until within the last five years, during which time they devoted their attention to other lines.

The Iron and Metal Trades.

The situation is dominated by the Coal and Coke strikes. So far as the producing interests are concerned the state of affairs is very much mixed. The blast furnaces of the valleys and of the Pittsburgh, Wheeling and Cleveland districts have felt the Coke strike first. Edgar Thomson, Laughlin and Stewart have stock enough to carry them along. The majority of the other stacks have either banked or blown out or will do so within a short time. The result is that there has been quite a scarcity of spot Bessemer Pig and an advance of as much as \$1 per ton has been secured. It has led to buying in the Eastern market, one Steel company having sold 10,000 tons from an accumulated stock.

Even some of the furnaces in Central Pennsylvania who could use anthracite threaten to bank because it would run up the cost. The anthracite stacks proper will find their capacity reduced when the usual admixture of Coke to the burden is dropped.

In the foundry grades of Pig Iron there has been no stiffening, because until now the Southern plants have kept running. Besides, there is quite a fair stock for the moderate current demand.

Quite a number of the rolling mills of the Central West, and notably those on the Indiana gas belt, are independent of the Coal supply. With them it is merely a question whether they can get their Soft Steel. Other finishing mills can help themselves by turning to oil.

While there has been an actual advance in Bessemer Pig and Soft Steel in the West, buyers are not yet paying any more money for Finished Iron and Steel. Manufacturers are asking an advance, but they are not getting it yet. In many cases the work proposed is simply stopped or postponed.

The stoppage of the blast furnaces is reacting unfavorably on Ore. Any prolonged strike would curtail the consumption thereof quite materially. Some of the lake vessels are even now being laid up.

As for the strike itself, the general opinion is that the men are hardly in a condition for long idleness. Besides, there is the significant fact that the Flat Top and Cumberland districts, two very large contributors to the supply, are fully at work.

On the other hand, it is conceded that wages in some sections have been unduly low, and it is rumored that some interests in the Connellsville region will grant the demands of the men. A very weak point of the position of the labor leaders is that they will not allow resumption, even if the demands are granted, locally, unless the surrender of the operators has been general.

If fuel is made dearer by a victory on the part of the men Iron and Steel will be correspondingly increased. Still, \$1 to \$2 per ton on Finished Material would probably cover the increased cost fully.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, }
CHICAGO, May 2, 1894. }

The Coal miners' strike is more serious than had been anticipated last week. It is now affecting the Iron trade in the greater portion of the West. Prices on all classes of goods are stiffer, and if advices from further east are borne out by the facts, there will be a decided scarcity of Manufactured Iron and Steel before many days, which will cause a material advance. Mills and furnaces in this immediate locality are not affected as yet, and most of them may be able to continue to run, as they are supplied with fuel mainly from independent sources.

Pig Iron.—Transactions in local Coke Iron have been on a little better scale, but Southern Iron shows no improvement whatever. The Coal strike in the South has not yet caused prices to be advanced by the Southern companies, although sales agents are daily in expectation of orders to mark up their rates. Lake Superior Charcoal continues neglected. Quotations are given as follows for cash:

Lake Superior Charcoal.....	\$15.00 @	\$15.50
Local Coke Foundry, No. 1....	11.25 @	11.50
Local Coke Foundry, No. 2....	10.50 @	11.00
Local Coke Foundry, No. 3....	10.00 @	10.50
Local Scotch.....	11.50 @	11.75
Ohio Strong Softeners No. 1....	12.00 @	13.50
Southern Silvery, No. 1.....	..... @	11.50
Southern Silvery, No. 2.....	..... @	11.00
Southern Coke, No. 2.....	10.00 @	10.35
Southern Coke, No. 3.....	9.75 @	10.00
Southern, No. 1, Soft.....	10.25 @	10.50
Southern, No. 2, Soft.....	9.75 @	10.00
Tennessee Charcoal, No. 1....	15.00 @	15.50
Tennessee Charcoal, No. 2....	14.50 @	15.00
Alabama Car Wheel.....	17.55 @	18.00
Jackson County Silvery.....	15.00 @	16.00
Other Ohio Silvery.....	12.50 @	13.00
Coke Bessemer.....	12.00 @	.....

Bars.—The past week witnessed a fair but not heavy demand, which comes from all classes of buyers. Prices were weak until two or three days since, when the effect of the Coal famine began to be noticeable, and the extremely low sellers asked higher prices. Values are now completely unsettled and sellers talk of an advance of \$1 to \$2 per ton over old rates. The Indiana manufacturers have a very great advantage now in their gas supply, which renders them independent, and they should be able to realize some financial benefit from their exceptionally good position. While prices can still be quoted on the same basis as was reported last week, these rates may be changed at any day, and in fact some mills are refusing to quote unless specifications are first submitted to them. Jobbers here are pretty fairly supplied with stock and in position to fill a good demand in case any scarcity should develop. They continue to quote small lots from stock at 1.20¢ upward for Bar Iron and 1.30¢ upward for Soft Steel Bars, according to quantity.

Structural Material.—The character of the trade has not changed. The city demand is quiet, but an excellent business is being done in small lots for country consumers. Prices are now extremely firm and are expected to advance in accordance with advices received from Pittsburgh. Quotations on mill shipments, Chicago delivery, are as follows: Beams and Channels, 1.35¢ @ 1.40¢; Tees, 1.50¢ @ 1.60¢; Angles, 1.30¢ @ 1.40¢; Universal Plates, 1.30¢ @ 1.35¢. Small lots of Beams from stock are selling at 1.50¢ @ 1.60¢ per 100 lb.

Plates.—Manufacturers continue to stiffen in their quotations. More of them have withdrawn their low prices

and are now quite generally insisting on specifications being submitted before quoting. Mill shipments, Chicago delivery, may be quoted as follows: Tank Steel, 1.85¢ @ 1.40¢; Flange Steel, 1.60¢ @ 2.10¢; Fire Box, 2¢ @ 5¢. Store prices are as follows: Iron or Steel Sheets, Nos. 10 to 14, 1.80¢ @ 1.90¢; Tank Steel, 1.60¢ @ 1.85¢; Flange Steel, 2.10¢ @ 2.35¢; Boiler Tubes, 75 % off.

Sheets.—Manufacturers' agents report numerous orders being entered for Black Sheets. Some of the mills have done so well that they have now taken orders for all they can turn out for the next 60 days. Mill shipments of No. 27 Common Stove Pipe Iron are quoted, Chicago delivery, at 1.35¢ @ 1.40¢. A very good demand is noticed for better stock at higher prices. A good inquiry is being received for Galvanized Iron, on which prices are now firmer, but quotations on mill shipments are unchanged at 77½ @ 80 % off, Chicago delivery. Sheet Copper is quoted at 14¢ base, with no discount.

Merchant Steel.—Business is only moving in carload lots. Some little inquiry is reported from consumers who talk of placing orders for scattered deliveries, but so far no business of this kind has recently been entered. Prices are firm. We quote mill shipments, Chicago delivery: Smooth Finished Machinery and Tire, 1.70¢ @ 1.80¢; Open Hearth Spring Steel, 1.85¢ @ 1.90¢; Bessemer Machinery, 1.55¢ @ 1.60¢; Bessemer Tire, 1.40¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Billets and Rods.—Inquiries are now coming in for Steel Billets for delivery in July and August, but manufacturers are not inclined to quote so far ahead until the coal situation is cleared up. Nominal quotations are unchanged at \$17 @ \$17.25. Wire Rods are quiet with the nominal quotations continued at \$26.50.

Rails and Track Supplies.—The Steel Rail manufacturers have had a good week's business, entering a number of fair sized contracts, while prospects are excellent for continued trade. Quotations are unchanged at \$25 @ \$27 for standard sections of Steel Rails; 1.25¢ @ 1.40¢ for Steel Splice Bars; 2.30¢ @ 2.35¢ for Track Bolts with Hexagon Nuts, and 1.70¢ @ 1.80¢ for Spikes.

Old Rails and Wheels.—A sale of 500 tons of Old Iron Rails is reported, but they are for delivery outside of Chicago. Dealers quote Chicago delivery nominally at \$10. Long lengths of Old Steel Rails are unchanged at \$9.50 @ \$10, and short pieces at \$6.50 @ \$7. Old Car Wheels are nominally worth \$10 @ \$10.50.

Scrap.—An occurrence which shows the curious condition of Old Material was an exchange between dealers of No. 1 Forge Scrap for Malleable Scrap, in which the latter was valued at 50¢ per ton more than the former. Not many months ago Malleable Scrap was worth but little more than one half the price of Forge Scrap. Trade generally is extremely quiet. Dealers quote the following selling prices per net ton: Railroad Forge, \$9; Dealers' Forge, \$8 @ \$8.50; No. 1 Mill, \$6.50; Pipes and Flues, \$6; Heavy Cast, \$7 @ \$7.50; Stove Plate, \$5 @ \$5.50; Fish Plates, \$10; Horseshoes, \$9; Mixed Steel, gross ton, \$5.

Metals.—Carload lots of Lake Copper are quoted at 10¢. Casting Copper

is unchanged at 9½¢ on such brands as are available. A considerable quantity of Montana Copper on cars is tied up by the strike on the Great Northern road, and the filling of contracts is thus interfered with. Spelter and Pig Lead are crossing each other's tracks. Lead sold up to 3.35¢ and Spelter down to 3.30¢ during the week, but quotations are now 3.35¢ for Spelter and 3.30¢ for Pig Lead.

Dealers in Old Metals have refused to back up Graft & Co.; and appearances now indicate that the deal for fair buildings will also fall through.

The Manufacturers & Merchants' Warehouse Company, 10 to 24 West Water street, Chicago, have been appointed sales agents for the Calumet Iron & Steel Company, and will carry a full stock of Calumet Bar Iron and Steel.

Casey & Day, Room 445 The Rookery, Chicago, have issued a circular guaranteeing Riverside Steel Pipe to average full weight as heretofore. They charge that some manufacturers of Pipe are reducing weights below the usual standard.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., May 1, 1894.

The situation to-day is dominated by the strike in the Coal and Coke regions to such an extent that it is hard to determine what the condition of the Steel trade would be considered by itself alone. Under prevailing circumstances prices are feverish and higher, owing to the thorough cleaning up of stocks of Bessemer Pig and its products. Quotations are nominally 75¢ @ \$1 dearer on that grade of Pig Iron, and 50¢ @ 75¢ dearer on Billets, but quotations mean very little, because if the scarcity of fuel continues much longer, deliveries (being subject to the strike clause) could not be made, so that the purchase would be worth nothing. In addition to that consumers are likely to be equally tied up, so that they would have no use for material, even if they could get it. The other alternative is even more perplexing, because if a settlement is made prices may again be thrown into confusion and for a while remain so because of the pressure there would be to secure business at the nominally higher level of prices or as near to it as could be obtained. The ultimate outcome, however, is pretty sure to be a higher range of prices than have ruled thus far in 1894. It will take time to find a resting place for prices, no matter whether the strike be of long or short duration, but for a long pull the indications all point to a gradual return to a larger business and better prices, and anything that intervenes to prevent it will only accelerate the movement when it once gets fairly started.

Pig Iron.—Foundry Irons are not affected by the strike to the same extent as those used for Steel making, and while there is a fairly good demand, buyers can get almost anything they want at last week's prices. Eventually, however, it will affect both ends of the market, as Pig metal can neither be consumed nor produced without the regular fuel supply, so that what affects one will affect the other. Under these circumstances there is no movement to indicate any decided change in values in either direction, sellers being about as anxious to do business at former

prices as they usually are, particularly when the order is from gilt edged parties. Quotations are so diverse that they can only be given in general terms. Some buyers claim to be getting first-class No. 2 Foundry X at very close to \$11, delivered at points equal to Philadelphia, while sellers of leading brands claim \$12 @ \$12.25 as their minimum. The question arises whether the low priced Iron is of the grade represented, but as it answers the purpose of the consumer the name or grade is of little account. Bessemer is quoted at \$12.25 @ \$12.50, but if a buyer was willing to pay the price the chances are that he could not get the Iron, while if the holder was willing to sell he could not find any one to take it unless at concessions from to-day's asking prices. This is doubtless a temporary condition, and the quotations herewith given are merely a general indication of what sellers ask, rather than as representing actual sales—except in a small way:

Bessemer.....	\$12.25 @	\$12.50
Standard No. 1 Foundry X.....	12.50 @	12.75
Standard No. 2 Foundry X.....	11.75 @	12.25
No. 2 Plain.....	10.75 @	11.00
No. 1 Soft.....	11.50 @	13.00
No. 2 Soft.....	10.75 @	11.00
Standard Gray Forge.....	10.50 @	10.75
Ordinary.....	10.25 @	10.50

Steel Billets.—Asking prices to-day are \$17.75 @ \$18, delivered; what the selling price would be can only be known by making a firm offer. Agents here are instructed to quote subject to approval of the maker, and acceptance or non-acceptance of the order will doubtless depend on the view taken of the strike situation. At present there is more disposition to decline business than to accept it, but if the strike shows signs of disintegration sellers will very quickly reverse their position. It is a "subject to strike" market, and that is all that can be said about it.

Finished Material.—The improvement noted during the past two or three weeks is fully maintained, and in some cases additional gains have been made. Large orders are not on the market to any extent, but the demand for small and medium sized lots keeps up remarkably well and bids fair to continue indefinitely. Mills are running fuller than at any time for several months past, and although prices are still extremely low, they are gradually stiffening and are already from a tenth to a tenth and a half better than they were during the earlier months of the year. Nevertheless, business is not by any means what it ought to be, considering the long period of depression, and the chief satisfaction that the trade have is in the hope that the slight improvement realized is merely an indication of better things to follow. At present the heavy end of the demand for Bars and Plates is from small consumers, with a fair business in Structural and Bridge Material, but shipbuilders, locomotive builders and other important interests of that character are doing very little and are not expected to do much in the near future. This is in a measure offset by the demand for electric road equipments, water works, pier construction and similar improvements, but at most the aggregate is not likely to cause any great pressure of work, unless the mills fall behind owing to the strike cutting off their supply of fuel. Prices are steady and for small lots are quoted about as follows:

Grooved Skelp, delivered.....	1.15¢ @	1.25¢
Standard Refined Bars.....	1.30¢ @	1.40¢
Medium quality.....	1.15¢ @	1.20¢
Tank Steel.....	1.20¢ @	1.30¢
Heavy Plates.....	1.30¢ @	1.40¢
Shell.....	1.40¢ @	1.50¢

Flange.....	1.60¢ @	1.80¢
Angles.....	1.20¢ @	1.30¢
Beams and Channels.....	1.40¢ @	1.60¢

Old Material.—Business is somewhat restricted by the scarcity of fuel, and in some cases consumers of Old Material are asking for a postponement of deliveries. Sales recently have been larger, however, but it has been found impossible to secure any advance in prices, which are nominally as follows, delivered in consumers' yards:

Heavy Melting Steel.....	\$10.00 @	\$11.00
Light Melting Steel.....	8.00 @	9.00
No. 1 Wrought Scrap.....	10.00 @	11.00
Machinery Cast.....	9.50 @	10.00
Wrought Turnings.....	8.00 @	8.50
Cast Borings.....	6.00 @	6.50
Old Iron Rails.....	12.00 @	12.50

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, May 1, 1894.

With Coke making in the Connells-ville region practically suspended and no indications of a break in the Coal miners' strike, the situation among the mills and blast furnaces is daily becoming more serious, and prices on all kinds of Iron and Steel products for close delivery have shown a sharp advance, particularly Bessemer Iron and Billets. Reports from leading mills show that unless fresh supplies of Coal are received within a week operations will be suspended, while others have enough to run for three or four weeks. A few concerns, who use gas exclusively, will not be seriously affected, and expect to continue going right along. Among the blast furnaces there has been a total shut down in some sections adjacent to Pittsburgh, and by the end of this week the majority of the furnaces here will be banked. The Coal strike is now in its second week, and if appearances go for anything, the miners stand a show of winning. If this should prove to be the case, higher prices on Finished Material would have to be obtained in order to offset the increased cost of fuel, and should it so happen that the Coke workers would gain their demands, it would make a sharp advance in Coke imperative and makers of Pig Iron and Billets would have to get higher prices. On the other hand, should both strikes be lost by the workmen, a reaction in prices would follow immediately. It will thus be seen that the future is very uncertain. Meantime the low quotations put out some time ago have been largely withdrawn, and prices on all kinds of Raw and Finished Material for May delivery are considerably higher, and predictions of \$12 for Bessemer Pig and \$18 for Steel are heard everywhere.

Pig Iron.—The Coke strike has caused a complete shut down of the furnaces at Cleveland and in the Mahoning Valley. In the Shenango Valley Stewart is working, having had a considerable stock of Coke piled. In the Pittsburgh district the two Carries are off, and also the two Monongahela stacks. The two Shoenberger stacks will bank this week, and the same is true of the two Lucy stacks, as the local interest will keep Coke for Edgar Thomson. Edith has been out for some time, while the two Isabella stacks will probably close this week. The three Laughlin stacks are going, with a good supply of Coke on hand. The shutting down of so many furnaces, in connection with the heavy April sales, has brought about a famine in Bessemer

Iron for close delivery, and it can hardly be had at any price. Of course, buyers are taking on only what material they need to cover sales of finished product, but for such purchases they are paying from 50¢ to \$1 advance. About the middle of last week Bessemer sold at \$10.50 @ \$10.75, while to-day for May delivery sellers ask \$11 @ \$11.25 and some business has been done at these figures, in lots ranging from 300 tons to 1000 tons. An interest in the Mahoning Valley that has from 8000 to 10,000 tons is holding the Iron at \$11 at furnace, equal to \$11.60, Pittsburgh. Gray Forge and Foundry are firmer and for close delivery show a slight advance. As showing the desire of some makers to hedge as much as possible against a shortage, it is worthy of note that a local interest has bought back a block of Bessemer Iron, sold last month, at an advance of 25¢ per ton, on the promise that the Iron will be returned in June or July. The seller thus saves the cost of carrying the Iron for practically two months. For sharp delivery the following quotations are ruling:

Neutral Gray Forge.....	\$9.40 @	\$9.50, cash.
All-Ore Mill.....	9.50 @	9.75 "
No. 1 Foundry.....	11.25 @	11.50 "
No. 2 Foundry.....	10.40 @	10.75 "
No. 3 Foundry.....	10.00 @	10.25 "
Bessemer.....	11.00 @	11.25 "

We note a sale of 1000 tons of Bessemer at \$10.80, 500 tons at \$11 and 300 tons at \$11.15, all for May delivery. Also 300 tons of White Mottled Iron at \$9, delivered, 25 tons of No. 2 Foundry at \$10.40, 25 tons at \$10.60 and 50 tons at \$10.75, also for May delivery.

Ferromanganese.—We note a sale of 50 tons for May and June by the local maker at \$53, delivered.

Billets.—The situation of the Bessemer Pig Iron market as given above also applies equally well to Billets. The certainty that the mills will have to close before long unless the Coal strike is ended, coupled with the fact that all the makers have considerable tonnage booked, has forced the price of Billets for May delivery up to a point that shows an advance of fully \$1.50 per ton over former prices. During the week Steel has sold at prices ranging from \$16 per ton up to \$17.15, at maker's mill. As in the case with Pig Iron, buyers are placing orders only for what Steel they must have, and sellers are putting the screws on pretty tight. Several Pittsburgh mills have no Steel to sell for May, while those who can spare some, and also the brokers, are asking \$17 @ \$17.25, at maker's mill. The Wheeling mills ask \$16.50 at mill, and it is probable still higher prices will be ruling before this week has expired. Considerable Wheeling Steel has been brought to Pittsburgh within the last few days. We note a sale of 1000 tons at \$16.75, at maker's mill, 600 tons at \$16.90, and a sale of 3000 tons of Rod Billets at \$16.50, maker's mill, equal to \$17.15, Pittsburgh.

Plates.—The volume of business is fairly large, but is for ordinary lots only. The Coal strike is having its effect, and some low quotations on Tank Steel put out last month have been withdrawn, several makers having set 1.15¢ at mill as their minimum price. We quote as follows: Tank Steel, 1.15¢ @ 1.25¢; Flange, 1.40¢ @ 1.45¢; Shell, 1.30¢ @ 1.35¢; Marine, 1.50¢ @ 1.60¢; Fire Box, 1.75¢ @ 4¢, as to quality. A local maker has canceled an order for 1000 tons of Tank Plate and it is now in the market.

Structural Material.—Last week an agreement was reached by three of the

leading Beam mills by which 1 20¢ at mill was fixed as the minimum price. Trade is not very active, and the fear is expressed that building operations will fall far short of expectations. We quote as follows: Beams and Channels up to 15 inches, 1.20¢ @ 1.25¢; Angles and Universal Plates, 1.10¢ @ 1.20¢; Tees, 1.25¢ @ 1.35¢.

Sheets.—Some good sized contracts for Black Sheets have been placed and others are under negotiation. Prices are showing a slightly firmer tendency, and for ordinary lots are ruling as follows: No. 24, 2.15¢; No. 26, 2.25¢, and No. 27, 2.35¢, at mill. For good sized orders these prices are shaded.

Bars.—Trade is very quiet and prices seem to be getting worse. Reports are going that 1¢ at mill for Common Iron Bars is no longer the ruling price, but is being materially shaded. The lower prices do not quicken the demand, and the outlook is far from encouraging. Now that the hot weather is coming, the output of the mills will naturally be curtailed, and this may improve the condition of affairs. We quote Common Iron Bars at 1¢ at mill, but as stated above, this price is being shaded right along. Steel Bars are ruling at 1.10¢ @ 1.20¢. The advance in Billets is expected to lead to higher prices for Steel Bars before long.

Merchant Steel.—There is no change worthy of note, and we quote as follows: Bessemer Machinery, 1.30¢ @ 1.35¢; Open Hearth Machinery, 1.50¢ @ 1.60¢; Open Hearth Spring, 1.70¢ @ 1.75¢; Toe Calk, 1.80¢ @ 1.85¢; Machine Straightened Tire, standard quality, 1.60¢ @ 1.65¢; Cold Drawn Steel Shafting, 2.57½¢ base; Tool Steel, 5¢ @ 7¢ for ordinary grades.

Muck Bars.—Are ruling at \$19, delivered, with practically nothing doing.

Skelp Iron and Steel.—Prices on Steel Skelp are showing a firmer tendency, due to the advance in Steel. We quote as follows: Grooved Steel Skelp, 1.05¢ @ 1.10¢, according to size and order; Sheared Steel Skelp, 1.15¢ @ 1.20¢; Grooved Iron Skelp, 1.20¢ @ 1.50¢; Sheared Iron Skelp, 1.30¢ @ 1.40¢.

Pipes and Tubes.—The Citizens' Gas & Pipe Line Company of Peru, Ind., have placed an order with the American Tube & Iron Company for about 5 miles of 8 inch Line Pipe. The Manufacturers' Natural Gas Company of Indianapolis, Ind., are also said to have placed a good sized order with the same concern. Merchant Pipe is in light demand, and prices show no improvement whatever.

Wire Rods.—An inquiry for 2000 tons of Rods is in the market, and is expected to be placed at early date; \$23.50 @ \$24 for forward delivery are the ruling quotations in the absence of sales.

Wire Nails.—The demand has shown considerable improvement during the past week, and the probability that additional mills will close soon on account of the Coal strike has imparted a firmer tone to the market. We quote Wire Nails at 95¢ at mill in round lots and \$1 in carload lots. Cut Nails may be quoted at 85¢ @ 90¢ at mill for the usual averages.

Barb Wire.—The volume of business last week was quite heavy, and makers believe that business for May will be larger than during April. We quote Four-Point Galvanized at \$2.10, in carload lots at mill, and Painted at \$1.75 @ \$1.80; Plain Wire for prompt de-

livery is quoted at \$1.40, in carload lots.

Connellsville Coke.—There are no signs as yet of a settlement of the Coke strike. The operators say that it is utterly impossible to grant the demand of the men, and in addition to this the request that the Coke Workers' Union be recognized will not be entertained under any consideration. Thus far there has been little or no violence shown by the strikers, and no serious trouble is anticipated.

St. Louis.

(By Telegraph.)

Office of The Iron Age,
Bank of Commerce Building,
St. Louis, May 2, 1894.

Pig Iron.—The market is in much the same condition as last noted. The Coal strike has not as yet had any effect on prices, and there seems to be plenty of Iron to fill all orders for the present. Furnacemen, however, require that orders for future delivery be submitted to them for acceptance, and this course is now being followed. Transactions are almost entirely confined to small lots, the largest single sales for the week running up to 300 tons. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.75 @	\$11.00
Southern Coke, No. 2 Foundry.....	9.75 @	10.00
Southern Coke, No. 3 Foundry.....	9.50 @	9.75
Southern Gray Forge.....	9.25 @	9.50
Southern Car Wheel.....	16.75 @	17.75
Lake Superior Car Wheel..	16.25 @	16.50
Ohio Softeners.....	14.25 @	14.50

Bar Iron.—Jobbers report only a moderate demand, while mills continue to complain of the dullness prevailing. Prices are no better and some exceedingly low quotations are reported. Mills ask 1¢ @ 1.05¢, and are practically doing nothing in the way of large orders. Jobbers quote 1.25¢ @ 1.30¢ from store according to quantity.

Barb Wire.—There is a continued falling off in the demand and mills are not running quite so full as they did two weeks since. Prices grow weaker with the decline in business. Painted is quoted at \$1.75 @ \$1.80 in carload lots from mill. Jobbers are only fairly busy. Galvanized is quoted at \$2.15 @ \$2.20.

Wire Nails.—There is no improvement to note in Wire Nails either as regards price or demand. Carload buyers are able to purchase Nails at from \$1 to \$1.05 per keg, f.o.b. cars East St. Louis. Jobbers ask \$1.10 @ \$1.20.

Rails and Track Supplies.—There is nothing doing in either Rails or Track Supplies, and prices are unchanged as follows: Splice Bars, 1.30¢ @ 1.35¢; Spikes, 1.70¢ @ 1.75¢; Bolts, Square Nuts, 2¢ @ 2.05¢; with Hexagon Nuts, 2.10¢ @ 2.15¢; Steel Links and Pins, 1.60¢ @ 1.65¢; Iron, 1.75¢; Old Rails are dead at \$10, while Steel Rails are no better off at \$26 @ \$27.

Pig Lead.—There has not been much movement in this metal since our last report. The market has varied from 3.17½¢ to 3.22½¢ and closes to-day at 3.20¢. Buyers cannot be induced to take hold at these prices and sellers seem determined not to accept less than the last quoted price—viz., 3.20¢.

Spelter.—Notwithstanding the fact that nearly 50 % of the producing capacity of the country is shut down, prices

recently quoted would seem to indicate that buyers are not interested in the market. At 3.30¢ some little metal has been sold, but the sales were generally carload orders for prompt shipment. There is not much surplus Spelter on hand, and it is doubtful if 500 tons could be bought better than 3.40¢, while carload orders are taken, as above stated, at 3.30¢.

Cincinnati.

(By Telegraph.)

Office of The Iron Age, Fifth and Main Sts.,
CINCINNATI, May 2, 1894.

There has been scarcely enough business in Pig Iron during the week to indicate any essential change in the market. The only transaction beyond the few current consumption sales, which were inconsiderable, was a sale of 1500 tons of No. 2 Foundry, and this was made on the basis of \$675, f.o.b. Birmingham, and for long forward delivery. Few if any of the furnaces would contract for early delivery until the coal miners' strike is settled, but fortunately there is not much demand, and the depressed condition of general business is such that there is little hope of any essential increase in the demand in the early future. Consumers in the district have about all the Pig Iron they require in the early future under contract, and there are few applications from the East or elsewhere for new supplies. The trade is waiting to see what course the developments of the future may take. Quotations are unchanged, but are scarcely more than nominal, as follows:

Foundry.

Southern Coke, No. 1.....	\$10.25 @	\$10.10
Southern Coke, No. 2.....	9.25 @	9.50
Southern Coke, No. 3.....	8.75 @	9.03
Ohio Soft Stone Coal, No. 1.....	14.50 @	15.50
Ohio Soft Stone Coal, No. 2.....	14.00 @	14.50
Lake Superior Coke, No. 1.....	12.50 @	13.00
Lake Superior Coke, No. 2.....	11.50 @	12.00
Hanging Rock Charcoal, No. 1.....	17.00 @	17.50
Hanging Rock Charcoal, No. 2.....	16.50 @	17.00
Tennessee Charcoal, No. 1.....	13.00 @	13.50
Tennessee Charcoal, No. 2.....	12.00 @	12.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	16.25 @	17.00
Lake Superior Car Wheel and Malleable.....	16.25 @	16.75

Forge.

Gray Forge.....	8.50 @	8.75
Mottled Coke.....	8.25 @	8.50

Louisville.

LOUISVILLE, KY., April 28, 1894.

There has been no change in prices as a result of the Coke strike, though the tendency has been to make buyers desiring Iron for future delivery to be willing to contract for reasonable amounts for deliveries extending through the year provided they can purchase at prices ruling the last week. Furnaces are not yet disposed to sell heavily, as they do not know what effect the continual strikes in the coal fields will have upon the Iron industry. It is possible that some will have to shut down, and when they resume they will have contracts already taken that will keep them employed some time to fill without assuming any new ones. Among Pipe shops, Car shops, and Stove foundries there is yet great complaint of the low prices finished materials have to be sold at; there has been no change of moment and prices remain yet upon a basis that is thoroughly unsatisfactory. We quote for cash, f.o.b. cars Louisville, Ky.:

Southern Coke, No. 1 Foundry.....	\$10.25 @	\$10.50
Southern Coke, No. 2 Foundry.....	8.75 @	9.25
Southern Coke, No. 3 Foundry.....	8.50 @	8.75
Southern Coke, Gray Forge....	8.00 @	8.50

Southern Charcoal, No. 1 Foundry.....	12.50 @	13.50
Southern Car Wheel.....	15.00 @	15.50

Financial.

The discouraging elements in the general business situation have continued in full force during the week under review. In some cases, indeed, they have become more intense, the net result being a marked setback in the growing volume of business and trade enterprise. The great strike of bituminous coal miners and that of the Pennsylvania coke workers, together with the labor troubles in various parts of the country, have tended to disturb and depress business to a serious extent. To this cause must be added the continued tariff uncertainty, poor railway earnings, the further outflow of gold from the country, and the labor unrest which finds a partial expression in the extraordinary movements of bodies of unemployed men and others toward the national capital. Each of these causes contributes to check and depress trade, and so to affect adversely the growth of confidence.

Nor is a revival of this quality aided by the knowledge that the public debt is increasing at the rate of \$8,000,000 to \$10,000,000 monthly. The Treasury statement for the month of April showed a balance of \$125,097,785, a loss during the month of \$8,852,239. The gold reserve, by withdrawal of the metal for shipment to Europe, has again been brought below the \$100,000,000 mark, standing on Wednesday at \$99,281,000. This, it is reported, is not causing great concern to the Treasury officials, as they believe that the gold fund can be again built up by exchanges with the banks if the shipments do not continue. But, from present indications, the export movement appears likely to do so. Last Saturday's steamers took out \$1,200,000, of which \$325,000 came from the Sub-Treasury, while of \$1,000,000 shipped to Europe on Wednesday of this week \$920,000 was taken from the same source, showing that the Government is likely to stand the brunt of the loss of gold. It is likely, moreover, that the shipments by next Saturday's outgoing steamers will be considerably larger than the amounts above mentioned—\$3,000,000 to \$4,000,000, or more, being hinted at. The banks do not feel themselves called upon to furnish the gold, but if the loss to the Treasury reaches a point to cause distrust, the banks will, no doubt, come to its aid with a portion of their vast reserves. The net exports of the metal for the present year to date amount to \$12,767,650, which falls below the net exports of any year since 1890. The proportion of gold received in customs payments at present is little more than 2%, a considerable falling off from the average.

The flow of money to this center continues in large volume. Notwithstanding the contributions of the banks to the gold exports—Saturday's statement showed a gain in specie of \$546,000, and an increase in the surplus reserve of \$1,410,000—the banks now hold \$83,417,930 above legal requirements. Loans expanded \$1,833,000, and deposits increased \$4,314,700. The profitable use of this large volume of money is still a source of much anxiety to the banks. Loans do not expand to any appreciable extent, and the money market is easier than ever. The offerings of funds on loan are practically unlimited. Call money is easy at 1%, and

even less; while time money is in abundant supply at 2% for 30 to 60 days, 2½% for 90 days and 3% for four to eight months. Good mercantile paper continues in steady demand, but the offerings are limited. Rates are still quoted at 3% for indorsements and 3½% @ 4% for single names.

Business in the Stock Exchange has been confined mainly to the "industrials." Railroad stocks have been dull and quiet throughout the past week. Some few issues made a better showing, however, on Tuesday. On the whole, speculation has been confined to the "professional" traders and certain manipulated stocks. Of these latter, American Sugar Refineries have afforded the sensation of the week. Dealings in sugar certificates have monopolized nearly two-fifths of all the week's transactions, the number of shares changing hands reaching over 370,000 in four and a half days. The upward rush of this stock from 98½ on Thursday to 107½ on Monday was attributed to manipulation by the pool which handles it, on the strength of reports that the sugar schedule in the new tariff bill would be arranged to protect the interests of the refiners. The bears have been very insistent in their efforts to break down prices, and have succeeded in some cases. Yet, on the whole, values have been well maintained. The real support of the stock market in these days is undoubtedly the enormous and growing surplus of idle money and the consequent ease with which stocks can be carried. A sharp rise took place in the Grangers, notably St. Paul, on Tuesday. The March statement of the road was published on that day, and showed a reduction of working expenses very nearly offsetting the decrease in gross earnings, leaving but a small net loss. General Electric was also firm on the rumor of a prospective resumption of dividends. The extreme fluctuations in the more active stocks during the week are shown in the following list, together with closing prices on May 2:

	High-Low-Closing	est.	est.	May 2.
Am. Sugar Ref.....	107½	98½	106½	
Chicago Gas.....	64½	62	64½	
Chic., B. & Q.....	30½	77½	80	
Chic., Mil. & St. Paul..	63½	61½	62½	
Chic., Rock Isl. & Pac..	69½	68½	69½	
Gen. Electric.....	40½	38	38½	
Louisville & Nashville..	50½	49½	49½	
Missouri Pacific.....	31½	29	31½	
National Lead, Common.	42½	37½	40½	
N. Y. & New England..	9½	8½	8½	
Northern Pacific, Pfd..	19½	18½	19	
Richmond & West Pt.				
Term.....	9½	9	9	
Union Pacific.....	20½	18½	18½	
Western Union.....	85½	83½	85	

The Pennsylvania Railroad Company have declared a semi-annual dividend in cash of 2½%. Railway and miscellaneous bonds have been quieter, but prices are well maintained. City bonds are in excellent demand. Abroad the inquiry for investment securities is very eager. Speaking on this topic Henry Clews said a day or two ago: "The remarkable bids for the Paris loan, amounting to 100 times the sum of bonds offered, and the offers for the German loan to three times the amount sought, are striking evidences of the extraordinary surplus of funds in Europe seeking employment. This is not without significance to our own investments. When the questions now pending in Congress have been disposed of the uncertainties which now temporarily check the European demand for our issues will disappear, and New York will be benefited by the investment demand of London, Paris and Berlin."

Government bonds have been firm and active, with an advance on the 5's cou-

pon. The closing quotations were as follows:

	Bid.	Asked.
2's, 1891, registered.....	96	113 3/4
4's, registered.....	113 3/4	114 1/2
4's, coupon.....	114	114 3/4
5's, registered.....	118	118 3/4
5's, coupon.....	119 1/2	119 3/4

Sterling exchange is quiet and firm. Rates were advanced on Tuesday, bringing them up to a point at which gold may be profitably exported. Bills are in limited supply while the demand is brisk. Actual business was done on Wednesday at \$4.87 1/2 @ \$4.87 1/2 for 60 days, \$4.88 1/2 @ \$4.89 for demand, \$4.89 @ \$4.89 1/2 for cables and \$4.86 1/2 @ \$4.86 1/2 for commercial. Domestic exchange in New York is quoted as follows: New Orleans, commercial 100 premium, bank 150 premium; Charleston, buying par, selling 1/2 premium; San Francisco, sight 12 1/2, telegraph 17 1/2 premium; Savannah, buying par, selling 1/2 premium; Chicago, 20 premium.

Bar silver has risen during the week to 29 1/2 pence per ounce in London and 64 1/2¢ in New York. Exports of the metal have been moderate.

The markets for staples are lower. Cotton exports have decreased in volume and the pressure of large stocks in sight has driven down prices to a very low level. Wheat shipments have been large of late, but have now fallen off again, while the stocks are heavy. The record for low prices for this cereal was broken again early in this week. Corn closed dull and weak.

Metal Market.

Copper.—The market is rather weaker in appearance. Offerings of Lake Superior Ingot at 9 1/2¢ have not met with response except where very small quantities were involved. Fair sized lots offered at 9 45¢ found very limited outlet and poor results attended efforts to draw out bids of 9 40¢ on larger quantities. As not unusual on a soft market, rumor had it that still lower prices were not out of the question, since the European market has not netted over the parity of 9 1/2¢ for some time past. Electrolytic apparently stands in rather better position since home purchases continue on a fair scale and 8 3/4¢ @ 9 1/2¢ cover the extremes of prices. Casting stock has not varied from 9¢ @ 9 1/2¢ in price, but finds merely routine sale.

Pig Tin.—There has been a sharp rise in prices and more activity in business. Even the speculative branch of the trade has been infused with a little animation, making, in all, a condition of affairs somewhat in contrast with the flatness that prevailed up to within a very recent date. At the beginning of the week under review 19.70¢ stood as a common selling price, while May delivery was at 0.10¢ discount. From that time up to Friday last none but routine business had been effected, although prices hardened. On Friday dealings were recorded to the extent of 150 tons at 19.75¢ @ 19.85¢ spot, 19.67 1/2¢ May delivery, 19.67 1/2¢ June, and 19.70¢ September. On the following Tuesday the interest became livelier and carried prices still higher in the face of a bank holiday in London. Sales were recorded to the extent of 75 tons at 20.05¢ @ 20.10¢ for May delivery, 19.95¢ for June, 19.95¢ for July and 20¢ for August, while as high as 20 1/2¢ was bid for spot. In the latter there was a clean advance of 0.42 1/2¢ from the lowest point of the week, and the distant futures moved up to the extent of about

0.30¢ during the interval. The feeling was somewhat quieter at the close, but the offering at less than 30.25¢ very reserved.

Pig Lead.—There has been slightly freer offerings by some producers. Speculators who carried a few carloads since early in the year unloaded also. Both movements came just at a time when consumers were very indifferent buyers. Between them they forced prices lower and for a time gave the market a weak appearance. About five carloads went at 3 3/4¢. That, however, disposed of the liquidation. Subsequent bids of the price named were ineffective in leading to business, and 3 42 1/2¢ @ 3.45¢ would now seem to be strictly inside rates for Western brands. Bids of 3 40¢ were refused.

Spelter.—Information came out soon after the date of our last report showing that a good portion of late accumulation in the West has been disposed of. This and the fact that production has been reduced considerably served to stiffen prices and give the market better tone. Eastern consumers, however, have purchased in a moderate way and are indifferent buyers at the present time. On good Western brands the popular quotations are 3.55¢ @ 3.60¢ for delivery here or at common point.

Antimony.—There is only jobbing business, but prices remain steady at 8 3/4¢ @ 8 1/2¢ for Hallett's and 10¢ @ 10 1/2¢ for Cookson's.

Nickel.—Sellers' prices are 40¢ upward, according to size of lot, &c., with as high as 45¢ quoted on small parcels.

Tin Plates.—No improvement is visible. Orders run quite as small as they did a week ago and they are not more numerous. Business has, in the meanwhile, been commonplace to the extreme, neither spot goods nor future shipments attracting livelier interest at the best terms quoted. Upon the whole, the market appears soft as well as peculiarly dull for this season of the year. For stock on the spot we quote as follows: Coke Tins—Penlan grade IC, 14 x 20, \$5.10; J. B. grade, full weight, \$5.15; light weights, \$4.75 for 100 lb, \$4.65 for 95 lb, \$4.60 for 90 lb; Bessemer full weight, \$5.15; light weights, \$4.70 @ \$4.75 for 100 lb, \$4.65 for 95 lb, \$4.55 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.40; Siemens Steel, IC basis, \$5.50; IX basis, \$6.60. Charcoals—Melyn grade, IC, \$6.25; Crosses, \$7.75; Alloway grade, IC, \$5.40; Crosses, \$6.50; Grange grade, IC, \$5.50; Crosses, \$6.60. Charcoal Ternes—Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11.25; M. F., 14 x 20, \$7.20; do., 20 x 28, \$14.50; D. R. D. grade, 14 x 20, \$5; do., 20 x 28, \$9.75; Alyn grade, 14 x 20, \$5.20; do., 20 x 28, \$10.25 @ \$10.40. Wasters—S. T. P. grade, 14 x 20, \$4.60; do., 20 x 28, \$9; Abercarne grade, 14 x 20, \$4.50; do., 20 x 28, scarce.

Aluminum.—A reduction has been made in the price of Ingot Metal in ton lots from 55¢ to 50¢ per lb for No. 2 grade, and from 60¢ to 55¢ for No. 1 grade. The base price of Aluminum Sheet has been reduced from 90¢ to 80¢ per lb; Aluminum Wire Rods from \$1.20 to 90¢ per lb and Nos. 9 to 14 gauge Wire from \$1.25 to \$1 per lb.

Saunders, Fielding & Bond, importers and dealers in tin plates and metals, have removed their office from

284 Pearl street to the Downing Building, 108 Fulton street, New York City. The firm are agents for the Pontymister Tin Plate Works of Newport, Wales. They have also offices at Swansea, Wales, and at Chicago, 419 Ashland Block, in which city they are the selling agents for the Morewood Tin Plate Company of Gas City, Ind.

New York.

Office of *The Iron Age*, 96-102 Reade street, New York, May 2, 1894.

Pig Iron.—The local and New England markets have been very quiet and have not as yet been affected in any way by the Coal strike. It is probable, however, that some of the Alabama furnaces will have to bank if the labor situation does not soon improve in that district. In Bessemer Pig we note a sale of 10,000 tons at private terms by an Eastern Steel works. We quote standard brands \$12.50 @ \$13.25 for No. 1; \$11.25 @ \$12 for No. 2, at tidewater. Southern Iron, same delivery, \$11.50 @ \$12.25 for No. 1; \$10.50 @ \$11 for No. 2; \$10 @ \$10.25 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$11 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.75 @ \$10.25.

Cast Pipe.—No contracts of any consequence have been placed in this territory. The lowest bids on the Washington order were Radford, \$20.10; National, \$20.40 and Howard Harrison, \$20.83.

Billets and Rods.—The market is dull at \$18 @ \$18.25 for domestic, and nominally \$27 @ \$27.50 for foreign. Domestic Wire Rods are nominally \$26.50 @ \$27.50, and foreign \$39 @ \$40, at tidewater.

Steel Rails.—In standard Rails the market is very quiet. It is reported that one of the mills has figured the total inquiries received during the past two months at about 320,000 tons. Not more than 10,000 to 15,000 tons of the total quantity has actually been placed. In Light Rails, quotations remain \$22 @ \$24 at tidewater, and Girder Rails at \$20.50 @ \$22 at mill. Relayers are quoted at \$14 @ \$16. An order for about 50 miles of Girder Rails for the New Orleans street roads has been placed with a Central Pennsylvania mill.

Track Material.—We quote as follows for small lots: Spikes, 1.50¢ @ 1.70¢; Fish Plates, 1.20¢ @ 1.40¢; Track Bolts, Square Nuts, 2¢ @ 2.10¢, and Hexagon Nuts, 2.10¢ @ 2.30¢, delivered.

Manufactured Iron and Steel.—The only contract of magnitude placed during the week has been that for the Wilks Building. The material, about 750 tons of Beams and Columns, will be furnished by a Pittsburgh mill. There is a good deal of complaint that the demand for material from small builders is extremely light. The agreement of two Pittsburgh and one Cleveland mill not to sell Beams under 1.20¢, Pittsburgh, has had no effect on this market as yet, Eastern mills underselling them. The Pittsburgh mills have had their fitting shop capacity so much crowded lately that they have been unable to take more work of that character. We quote: Beams up to 15 inch, 1.30¢ @ 1.50¢ for round lots; Angles, 1.20¢ @ 1.35¢; Universal Mill Plates, 1.15¢ @ 1.35¢; Tees, 1.40¢ @ 1.60¢; Channels, 1.30¢ @ 1.50¢, on dock. Steel Plates are 1.20¢ @ 1.30¢ for Tank; 1.35¢ @ 1.40¢ for Shell; 1.55¢ @ 1.60¢

for Flange, and 1.75¢ @ 2¢ for Fire Box, and 2¢ @ 2.25¢ for Locomotive Fire Box, on dock; Refined Bars are 1.20¢ @ 1.9¢, on dock, and Common 1.05¢ @ 1.20¢; Soft Steel Bars are 1.15¢ @ 1.30¢; Scrap Axles are quotable at 1.85¢ @ 1.50¢, delivered; Steel Axles, 1.85¢ @ 1.50¢, and Links and Pins, 1.40¢ @ 1.60¢; Steel Hoops, 1.40¢ @ 1.50¢, delivered; Cotton Ties, 65¢ @ 70¢ @ 45-lb bundle, at mill; Machinery Steel, 1.20¢ @ 1.40¢; Toe Calk, 1.80¢ @ 1.90¢, and Sleigh Shoe, 1.60¢ @ 1.75¢, delivered.

Old Material.—Buyers are very slow and business is light. Among the recent sales we note 500 tons of Old Steel Rails at \$9, Jersey City, the majority of buyers not being willing to offer more than \$8.50, and also 1000 tons of Old Steel Rails at \$8.50 to a mill in this district. Old Iron Rails are \$11 @ \$11.50, delivered at buyer's mill, and Scrap is weak at \$10, New York, for No. 1 Wrought.

Pig Iron Warrants.—The American Pig Iron Storage Warrant Company have issued the following statement for May 1:

	Tons.
Stock in yard, March 30, 1894.....	56,100
Put in yard for 30 days, ending April 30, 1894.....	2,300
Total.....	98,400
Withdrawn, 30 days, ending April 30, 1894.....	1,000
Net stock in yard April 30, 1894.....	97,400

Dana & Co., importers and Iron and Steel merchants, have removed to new offices in the Corn Exchange Bank Building, Beaver and William streets.

Grissold & Gillett, who are the American representatives of the Cammell Steel Rails, have removed their offices from 5 Wall street to more commodious quarters in the new Manhattan Life Building, 64-68 Broadway, New York.

Frank D. Moffat & Co., Iron merchants, have removed from 81 Fulton street to larger quarters at 61 Beekman street.

Ogden & Wallace, Iron and Steel merchants, have removed to their new warehouse, 577 to 583 Greenwich street, where they carry in stock a full assortment of Iron and Steel. They are also prepared to furnish direct from the mills every description of Iron and Steel, including Beams, Channels and Structural Work.

Thompson & Innes have removed from the Boreel to the Havemeyer Building.

British Metal Market.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, May 2, 1894.

Pig Tin operations have been on a larger scale and involve upward of 1000 tons, the greater portion three months' futures. Prior to the bank holiday on Monday an advance of £1 took place, due partly to firmness in silver and better Eastern advices. Meanwhile selling was encouraged by irregular silver quotations and realizations by some importers, but later strong speculative buying had a pronounced effect in the face of advices of April shipments from the Straits to the extent of 2800 tons. To-day the market profited from strong

advices from the United States. Last dealings were at £72. 12/6 @ £72. 15/ for prompts and £73. 7/6 @ £73. 10/ for three months' futures.

Copper has been inactive. Prices varied little until Friday, when American offerings caused a sharp decline and prompted unloading by tired holders. There were some speculative orders at the decline, but not enough to have any influence upon the market. Consumers have purchased very sparingly. Last dealings were at £39. 10/ for Merchant Bar prompts, £40 for ditto futures and £42. 15/ for best selected English. European stocks decreased 78 tons and the visible supply increased 72 tons during the last half of April. American arrivals during the month amounted to 6370 tons.

The Tin Plate market remains dull, although there has been rather more doing in 14 x 20 Cokes for prompt shipment. Prices continue low and rather weak. Stocks at Swansea are now about 257,000 tons. Shipments latterly have been heavy. Good orders reported for Black Plate. Liverpool quotations are as follows:

IC Cbarcoal, Alloway grade.....	12/ @ 12/6
IC Bessemer Steel, Coke finish.....	11/3 @ 11/6
IC Siemens.....	11/6 @ 11/9
IC Coke, R. V. grade, 14 x 20.....	Nominal.
Charcoal Terme, Dean grade.....	10/3 @ 10/6

Pig Lead prices have remained flat at £9 @ £9. 2/6 for Soft Spanish, and the market is without new feature.

Spelter has met with limited sale and the market is still rather flat at £15. 12/6 @ £15. 15/ for ordinary Silesian.

Foundry Mixtures

The educational campaign that is being conducted to give foundrymen the benefit of a wider knowledge of pig iron is likely to be productive of good results. The Foundrymen's Associations are calling on their most intelligent and practical members to give the public the benefit of their wide experience. There has been quite a decided difference in views expressed by them, but many points in common have been discovered. It is likely that it will be decided that, for the smaller works at any rate, some simple test will be adopted that will give satisfactory results without the necessity of calling in the chemist except at rare intervals. For larger works it may be found best to combine both methods. We notice that the firm of Rogers, Brown & Co., who are prominent sellers of pig iron, have undertaken to place in the office of each iron foundry in the United States a copy of the pamphlet on foundry mixtures, written by W. J. Keep of Detroit. It is the paper that was read before the Foundrymen's Association at the meeting held at the Manufacturers' Club, in Philadelphia, on Wednesday, April 4, and printed in *The Iron Age* April 12. The paper has attracted much attention and it is now published in a very convenient shape for reference.

The Montpelier Sheet & Tin Plate Company of Montpelier, Ind., was incorporated on the 19th inst. with a capital stock of \$200,000. The stockholders are Monroe Seiberling and

Charles A. Ford of Kokomo, and Carl W. Kolbe, Daniel A. Walmer and David Moser of Montpelier.

Dr. Francis M. Simonds has opened experimental analytical and assay laboratories at 20 Platt street, New York. He proposes to offer facilities to business men who wish to work or experiment for themselves in any particular line.

The New York office of the Huyett & Smith Mfg. Company has been removed to the Havemeyer Building, 26 Cortlandt street.

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HARDWARE.

Condition of Trade.

DURING APRIL the demand was somewhat spasmodic and uneven. The month opened with trade that was somewhat disappointing, but the last half of the month showed a perceptible improvement. On the whole the aggregate of business was fair. May opens without any special change in the general situation, a good many orders coming in from the trade, but mostly for small quantities. In the matter of prices the market continues weak, although it is a question whether or not in many lines the bottom has been reached. The low price of raw material, the reductions which have been made in wages, and the economies to which manufacturers resort in the production of their goods, have the effect of diminishing costs to a point considerably below that of former years, and the desire on the part of manufacturers to keep their works in operation has the effect of inducing them to make such concessions in prices as will enable them to market their goods. There is consequently in many lines a gradual shading of quotations. This is not confined to manufacturers, but the jobbers also desiring to hold their trade and dispose of their stocks are offering inducements in the way of low prices. The fact that many retailers who are careful buyers are purchasing in unusually small quantities prevents them doubtless in many instances from obtaining as low quotations as are within their reach. The probable duration and effect of the coal strike is being regarded by the trade with much interest, and its effect is already slightly felt on some goods which lie near the raw material, inasmuch as it induces an element of uncertainty, in view of the fact that if long continued it would produce a scarcity of fuel and cause the shutting down of works. Some manufacturers are therefore disposed to ask slightly advanced prices on some lines, but the trade are not as yet disposed to pay any increased price. The general anticipation is that May will be characterized by a fair but not heavy trade.

Chicago.

(By Telegraph.)

Now that April has ended and a comparison of the volume of business in Shelf Hardware can be made, it is found that the aggregate for the month was but a trifle under that of March. The early part of April was a quiet period, but business picked up considerably during the latter half, which accounts for the excellent showing now made, and yet the condition of business in Shelf Hardware is by no means what it should be. In some cases this spring it has been necessary to considerably decrease the force of salesmen. Wire Cloth has firmed up during the week, and jobbers are now trying to get \$1.50. Prominent manufacturers are withdrawing all quotations. Jobbers further West are advising the Chicago trade that they are prepared to follow their lead in putting prices up. Heavy Hardware shows no special improvement, but fair inquiry is noted for Carriage Makers' Supplies. This branch of trade is in a different condition from previous seasons. Contracts are usually placed early in the year by carriage manufacturers, but this season they have not done so, and consequently they are purchasing stock steadily from week to week.

St. Louis.

(By Telegraph.)

One-third of the year is gone, and a comparison with the corresponding period of last year is not by any means satisfactory. In 30 days the summer months will be here with their accustomed dullness, so that if the present year is to amount to anything in the way of business it will have to be done in the last four months. In some lines there is an improvement to be noted. This applies particularly to water works and plumbing supplies, which is indirectly in the Hardware line. The sales of Gasoline Stoves, Refrigerators and kindred goods give evidence of falling behind last year, say from 15 to 20 per cent. Nails and Barb Wire are dull and prices weaker. Builders' Hardware continues in good demand. Prices in nearly all lines are low and do not seem to have any stability, thus reducing to some extent the volume of business. Retailers are carrying light stocks and their orders are smaller but more numerous. The surprise of the season is the demand for Bicycles, which has been far beyond what jobbers thought it would be. Wire Cloth is firmer and indications point to a sharp advance before many days.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—We are just now experiencing the serious annoyance of a strike on the Great Northern, one of our great transcontinental lines. Substantially all the men are out, and on the entire line traffic has been suspended. The result is uncertain both as to "when and how," both sides being determined and having large interests at stake. This contest will decide largely the power in the future of the American Railway Union, a new organization which will play a very important part in future strikes if it succeeds now, and not only the employees, but also all railroad managers, are vitally interested in the outcome of this struggle. The railroad authorities have been remarkably patient and conciliatory and have made very reasonable offers for a fair arbitration on the matters of difference.

In addition to the strike, trade has also been affected by the very favorable weather for seeding, which has side tracked nearly all things else for the time being. We have never known a more favorable time for seeding, and probably there has never been more seeding done in the same length of time in the Northwest than has been done in this last week of April. The weather, too, is very favorable for growth, and the crop starts off early and in fine condition.

This gives us renewed hope for the future, and after this temporary irruption of strikes and Coxeyite invasions and Democratic and Populist majorities in Congress shall have passed away, we may expect a steady and rapid improvement in business. Until then we shall have "to labor and to wait."

New Orleans.

A. BALDWIN & Co.—Business is still very quiet, although orders were a little more plentiful during the past week. The volume, however, is not very large, but under the present conditions we consider it a fair business. The heaviest movement seems to be in Builders' Hardware, and, notwithstanding the very low price on the leading staples, the demand for this class of material is very light. It has been a very long time since the iron market or Nail market has been so sluggish, and from the present indications it will remain so for some little while.

Omaha.

LEE CLARKE-ANDRESEN HARDWARE COMPANY.—While trade in a general sense can hardly be characterized as rushing, the record for the month of April does not show the natural increase over March which might reasonably be expected. This is no doubt attributable to the uncertain and changeable features of atmospheric conditions which have prevailed throughout this part of the country. Clear skies generally con-

duce to good trade and storms put a damper on it.

It was anticipated that spring with warm and pleasant weather would open early this season, and merchants generally expected that the usual spring business would manifest itself accordingly. It appears, however, that a postponement is in order on this account. The recent fine rains have done much for the country; indeed they are an absolute necessity, and will repay a hundred fold the few days of quietude that have been experienced. Country merchants and farmers are much encouraged with the prospects for corn crop, and report the soil in prime condition.

While the long continued doubt in regard to the action of the Government has crippled business interests for the past six months, and while great industries are tied up by differences between employers and employees and the issue is still in doubt, business men are naturally very cautious in their dealings where their interests are involved, and in times like these, when every impulse toward conservatism is regarded by many as an indication of failing confidence, the rank and file of the commercial world are quick to reflect the policy of the leading operators.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—Trade continues fair and collections moderately good. Nothing of special interest to note in our section. Buyers are still conservative, and jobbers are granting credits with discriminating caution, but the feeling strengthens that the worst is past and that careful management and a good crop will pull the country out and make a fairly good year of it.

Boston.

BIGELOW & DOWSE COMPANY.—The extreme low prices for all kinds of Hardware may reduce the sales to a trifling less value for April, but close observers place the bulk of goods handled as equal to if not in excess of last year. All the wholesale as well as the retail dealers are fully occupied and many houses have worked their forces overtime to insure early shipment of orders. New England is surely favored as compared with other sections of the country.

Cold and stormy weather in the early part of the month placed a check on general business, but the warm and pleasant weather of the past two weeks has made the demand very active. Prices of everything are very low, but there seems to be a disposition now to call a halt, and while prices are not advanced, there is an inclination to stop cutting, and it seems as if the bottom was reached. There have been few changes in prices. Wire Cloth is firmer in price. The mills are behind on orders, and there is a prospect that there will be the same shortage as last year. The ruling price, is now \$1.60 with a fair prospect of an advance later in the season. The recent advance in Tacks, &c., is being well maintained. Manila Cordage has advanced slightly. It seems as if this advance would continue. Some predict a price of 8 cents. The Bicycle trade is very active. Many numbers and styles of medium grade machines are hard to get, and stocks are low. The season promises to be a good one as regards quantity sold, but the margin of profit is very much less than it has been in past years. There is a growing trade among the regular Hardware dealers, who are now making Bicycle and

Bicycle Sundries an important branch of their business. There are many discouragements until a dealer understands how to transact a Bicycle business, but once learned it cannot but be a source of profit.

The prospect of an early settlement of the tariff question is having a beneficial effect on general business, and there are many who believe that better times are not far distant.

Cleveland.

THE W. BINGHAM COMPANY.—It is useless to look for improvement in business so long as there is so much labor agitation, strikes and rumors of strikes, and our Congress is so dilatory about the tariff question. Trade in the early part of April was fairly good, comparatively. The latter part of the month was not quite so good and the prospects not at all flattering. The coal strikes, if continued for any length of time, will make a famine in some lines, Wire of all kinds particularly. Notwithstanding this, the prices are weak all along the line, the exceptions being Tacks, which have taken on an unnatural and unhealthy advance, and one that will not be long continued, and Wire Screen Cloth, which is already becoming scarce, and upon which we look for higher prices in the height of the season than those that prevailed last year. General trade can be summed up in one word—spasmodic. Collections are not so good as they have been.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Whatever gradual improvement has been shown in trade circles has certainly been reached over a corduroy road of complications, uncertainties and various depressing influences.

The dark clouds which one year ago began and so completely enveloped trade and finances were partially scattered, and we had hoped had quite disappeared. They, however, collected again, owing to other conditions which have from time to time come to the surface.

The efforts of manufacturers have from time to time been visibly seen in their attempt to stimulate trade by reduction in price, through minimum of profits, or possibly in instances without any profit to themselves, and through reduction in cost of manufacture. This latter could, of course, only be reached through strict economy and reduction in labor schedules, and where closed industries have from time to time resumed operations, almost invariably it has been upon conditions less favorable to both manufacturer and employees than those which had heretofore existed; but again clouds would gather and overcast the industrial sky.

Many of the workmen who have been out of work for months, after having exhausted their earnings of a few years, were compelled to join the corps depending upon charity's funds, and thus struggle through the late winter months. Some of them have not shown the ready disposition to accept the only possible terms of wages that resumption permitted, and the struggle between manufacturer and workmen has been hard and unequal, but gradually intelligent reasoning on the part of the manufacturer with the leaders of the wage earners has in most instances accomplished the only possible result.

In many instances a more careful distribution of charity's funds has been necessitated by depleting funds in these organizations, and assistance has been necessarily withdrawn and workmen have been compelled to return to work, some cheerfully accepting the only alternative of lower rates of wages. Others have only returned when starvation stared them in the face. These clouds of unfortunate conditions, which have followed one another in rapid succession, have been like irritants to already malignant sores, and they required intelligent treatment, with all the forbearance and business sagacity and caution that wise judgment could suggest.

The last outbreak in labor strikes in the coal and coke regions of Pennsylvania has now extended to various parts of the country, and has extended into strikes of smaller industries, and at the present time it is estimated that 200,000 employees have thrown down their implements of work.

This last outbreak on the part of the wage earners overshadows the lesser events that have outcropped during the last few months. The unrest is further shown by the scattered forces throughout the country who labor under the mistaken idea that they can improve matters by leaving their homes and pushing on to Washington.

It is most unfortunate that these strikes, combined with the uneasy feeling and unrest, should occur just at this time when the cool sober judgment of all persons is so necessary in climbing over the rugged path of uncertainty and depression in order to gain the even road of prosperity. This road of prosperity must be reached before workmen can possibly share the results which prosperity and profit alone can guarantee or permit.

While this state of feeling exists we cannot look for a complete revival of trade, not even in locations that are not immediately affected, but are immediately within the reach of the daily press and telegraphic communications, and the result is naturally felt to a greater or lesser extent throughout this broad land, hence conservative methods in buying still continue, while increased orders are spasmodically apparent with each bright spot through the clouds referred to.

The mild weather during the last days of April made a sudden demand for leading goods, and as many customers always will postpone making purchases until the last moment, a quick demand came for these goods. Embarked with other things naturally there was a demand for Lawn Mowers. The low prices at which some of these goods are now being sold bring them within the reach of any one, even though they have but a few feet of ground. In buying these the same mistaken belief of the lowest price being the cheapest is frequently found in the buyer. This error, however, is soon followed by an investment of from \$1 to \$3 in a hopeless attempt to improve the wobbling wheel, which in many instances is at last thrown aside, and a better grade either purchased or borrowed from a neighbor. Persons desiring a good, smooth lawn should begin on the lawn early in the spring, then by constant cutting of the grass with a good Lawn Mower the desired result will be obtained.

Wire Cloth remains firm at the recent advance in price. There is still an activity in the Wire Nail market. Other season goods remain without any change in price.

Collections are only fair.

Referring to the state of trade and the conditions of unrest throughout the country, to those who think they cannot see daylight in the distance, we would say that May 1, 1894, is the fifti-

eth anniversary of the first short telegraph that was completed between Baltimore and Washington, and the first message that passed over the wire of Professor Morse's telegraph, 22 miles between these two cities, was that Henry Clay was that day nominated on a ticket for President and Mr. Frelinghuysen for Vice-President. What changes have taken place since that time! What improvements; what rapid strides. We have lived through prosperous and depressed times, but this great country has moved onward, onward. So it will continue; and we trust in the near future the dark clouds with which this country has been compelled to contend will entirely disappear, the unrest be quieted, and we continue to be a prosperous nation.

We admit that it is hard for those that have fallen by the wayside financially during the last year. We acknowledge the fact that others must fall, and that only cool, sober judgment, leaving prejudice aside, in fact, leaving political antagonism temporarily aside, take no heed of the opinions of the partisan pessimist. We admit the road is hilly and the atmosphere foggy, but there is a good road within reach, and a clear sky will be found beyond the present existing fog.

Notes on Prices.

Wire Nails.—The market is scarcely as active as it has been, but there is still a good demand. In the matter of prices there is a somewhat improved tone, and manufacturers are disposed to withdraw some of their extreme quotations, particularly on the ground of the uncertainty as to the duration and effect of the coal strike. On the whole, however, the market remains in substantially the same condition as at our last report, being represented by the quotation of 95 cents for carload lots at factory, a figure which still can probably be shaded. Small lots from store in New York are held at \$1.15 to \$1.25.

Chicago, by Telegraph.—The early part of last week prices were in a seriously demoralized condition. Some manufacturers became apprehensive as stocks slid up in their warehouses, and they made strenuous efforts to unload them. Later in the week, however, the situation changed materially. The coal famine began to have its effect, and when it was seen that some of the largest concerns would very shortly be obliged to shut down for lack of fuel the Nails in warehouses began to look more valuable. Prices have consequently stiffened, and, as usual when this takes place, inquiries become larger and specifications on old orders came in more freely. Quotations on factory lots now range from \$1.05 to \$1.10, Chicago, and if the coal strike does not soon end they will go higher. Stocks in dealers' hands have been pretty well run down, and are in such condition now that an advance by manufacturers will immediately be responded to by the jobbers, who for the present are quoting small lots from stock at \$1.10 to \$1.15.

Cut Nails.—There continues to be a fair but not heavy demand for Cut

Nails, and the market, on the whole, is in about the same condition as last week. The Eastern mills are holding up prices pretty steadily, the principal disturbing factor being the entrance into Eastern territory of Western Nails, which are being offered and to some extent sold in Baltimore, New York, Philadelphia and other points through the Middle States. The Western price is represented in a general way by the quotation of 90 cents for carload lots at mill, but this is shaded 5 cents and in some cases more, especially when placing Nails in Eastern territory. The price of Nails delivered in New York is 95 cents to \$1 base, small lots from store being quoted regularly at \$1.10 to \$1.15.

Chicago, by Telegraph.—Manufacturers report a falling off in orders since last report and some weakness in price, owing to competition from factories in other districts. The local makers continue to quote factory lots on a basis of 95 cents, Chicago, for 55 cent average. Jobbers are holding small lots from stock at \$1.05 to \$1.10.

Barb Wire.—There is a perceptible falling off in the demand for Barb Wire. There is, however, a fair business still doing. The irregularities in price to which we have referred still continue, and while the market is represented by the following quotations for Four Point Galvanized, delivered at the points named, it is not unlikely that they could be shaded: Pittsburgh, \$2.05 to \$2.15; Cleveland, \$2.10 to \$2.20; Cincinnati or Allentown, \$2.15 to \$2.25; Chicago or New York, \$2.20 to \$2.30.

Chicago, by Telegraph.—Manufacturers report a very good condition of business with some sections of the West, which keeps their order books in fair shape. The demand is particularly good from the Southwest. Business latterly has picked up to some extent with the Northwest, but orders from this section have seldom exceeded carload lots, being mainly for lots of two to three tons. Prices are unchanged at about \$2.15, Chicago, for factory lots of Galvanized Barb Wire and \$2.30 to \$2.40 for small lots from jobbers' stock.

Plain Market Wire.—A fair but not especially heavy business is being done in Plain Market Wire, and prices continue as they have been for some time, low and somewhat uneven, the competition between the mills being active. Base sizes are being sold at \$1.30, f.o.b. mill, with proportionate advances for the small sizes. Galvanized is regularly quoted from $\frac{1}{2}$ to $\frac{3}{4}$ cent advance, but in some cases it is bought at $\frac{4}{5}$ cent advance, there being an apparent tendency to diminish the extra.

Hawthorne Julep Strainer.—Manning, Bowman & Co., Meriden, Conn., are putting on the market this Strainer, which was described in our last issue.

It is sold to the trade at \$8 per dozen, subject to a discount of 25 per cent.

Keystone Open Link.—This Link was illustrated in *The Iron Age*, April 5, as put on the market by the Philadelphia Drop Forge Company, Philadelphia. It is drop forged of Bar Steel and is sold to the trade from the following list, subject to a discount of 40 per cent.:

Inch.....	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
Per gross.	\$23.00	26 00	29.00	32.00	35.00

Adjustable Bathtub Seat.—A description of this Seat appeared in our last issue. The Seat is put on the market by the St. Louis Bronze & Aluminum Works, St. Louis, by whom it is sold from the following list, subject to a discount of 35 per cent. to the trade:

No. 1, nickel plated, ash wood bottom with oil finish.....	\$3.50
No. 2, black enameled.....	2.50

Columbian Screw Plate.—This article was described in last week's *Iron Age* as put on the market by Alfred Ely & Co., Baltimore, Md. The discount to the trade on the Screw Plate is 33 $\frac{1}{3}$ per cent.

Simplex Cork Puller.—The Simplex Cork Puller, described in our last issue and manufactured by Manning, Bowman & Co., Meriden, Conn., is sold at \$21 per dozen, subject to a discount of 25 per cent. to the trade.

Cordage.—There are rumors of some changes in the management of the United States Cordage Company, and of other negotiations looking to the securing of harmony in Cordage interests. As a result of this and other influences the market is firmer and a slight advance has been made in price. The market is now represented by the quotation of 6 $\frac{1}{2}$ cents for Manila and 4 $\frac{1}{2}$ cents for Sisal in large lots, f.o.b. factory or New York, subject to the cash discount of 1 $\frac{1}{2}$ per cent. The trade are placing their orders more freely than for some time in view of the possibility of still higher prices.

Glass.—Prices and conditions in the Glass market remain without change as reported last week. There appears to be no scarcity of the smaller sizes of Glass, but enough to carry the trade until fall. Desirable sizes of larger Glass, it is understood, are sought after, and the lack of sufficient quantity to supply future demand may ultimately result in a larger use of Plate Glass as a substitute. It is reported that the factories in operation represent a capacity equivalent to 1054 pots, which shows an increase of about 50 pots during the past month. Pittsburgh prices are reported as follows: In small quantities by jobbers, single strength, 80 and 10 per cent.; double strength, 80 and 10 and 5 per cent. discount. Factory prices are given as 85 per cent. discount for single and 85 and 10 per cent. discount for double strength Glass. Plate Glass remains firm at 70 and 10 per cent. discount.

Manufacturers' Association Dinner.

THE FIRST ANNUAL DINNER of the Manufacturers' Association of Kings and Queens Counties, New York, was held on Monday evening, April 30, at the Pouch Mansion, Brooklyn. It was a large and representative gathering, the guests including many gentlemen prominently identified with manufacturing interests. Many of those present were comparative strangers to one another, except as they have met casually during the past few weeks since the association was organized, but a cordial and enthusiastic spirit pervaded the assemblage, and the occasion was much enjoyed and in all respects completely successful. The dinner was an excellent one and admirably served. The toast list, which evidenced the care with which the details were arranged, was as follows:

Baird answered respectively to the toasts, "Labor and Capital," "Our Lawyer" and "Our Politician," as the speakers who had been assigned to these subjects were unable to be present.

The work of the association is, we are advised, progressing very satisfactorily and constant accessions are being received to its membership. Its importance and the influence which it is entitled to exert are shown in the fact that the amount of capital already represented is estimated at \$50,000,000, while in the employ of the houses identified with it are probably nearly 50,000 persons.

Hardware Organizations.

Southern Hardware Jobbers' Association.

AT THE approaching annual meeting of the Southern Hardware Jobbers' Association, which will be held in Richmond, Va., June 5, at-

Credits and their application; Syndicate buyers and their connection and methods of business.

It is expected that there will be a full representation of the membership of this association, which includes the jobbing trade embraced within the territory south of the Ohio River, west of the Potomac and east of the Mississippi.

A Hardware Club in London.

The *Ironmonger*, London, April 21, suggests that a Hardware or Metal Trades Club should be organized in that city with the usual conveniences and appurtenances of a good social club. Such a place is referred to as sure to be a great convenience to a large number of persons connected with the trade in London, and of especial service to those who have to visit town on business more or less frequently. The fact that there are similar organizations in this country

TOASTS.

TOASTMASTER.

THE GOVERNOR OF THE FEAST.

"Pardon gentles all,
The flat unraised spirit that hath dared
On this unworthy scaffold to bring forth
So great an object."

—*Henry V*, Act I, Scene —.

HENRY B. HAIGH.

OUR MUNICIPALITY,

A BUSINESS CORPORATION.

SANS DEBT; SANS FRAUD; SANS POLITICS.

"In the posteriors of the day;
Which the rude multitude call afternoon."

—*Love's Labor Lost*, Act V, Scene 1.

CHARLES N. CHADWICK.

OUR HOPE,

A CLOSER UNION.

"The friends thou hast, and their adoption tried,
Grapple them to thy soul with hoops of steel."

—*Hamlet*, Act I, Scene 3.

WILLIAM H. NICHOLS.

OUR PURPOSES.

"From this very moment,
The firstlings of my heart shall be
The firstlings of my hand."

—*Macbeth*, Act IV, Scene 1.

DANIEL M. SOMERS.

OUR PROGRESS.

"To-morrow, and to-morrow, and to-morrow
Creeps in this petty pace from day to day,
To the last syllable of recorded time."

—*Macbeth*, Act V, Scene 5.

HERMAN C. MACHLING.

INSURANCE POLICIES,

FIRE AND LIFE.

"All form is formless
It is not so; thou hast misspoke, misheard;
Be well advised; tell o'er thy tale again;
It cannot be; thou dost but say, 'tis so."

—*King John*, Act III, Scene 1.

JOHN I. COVINGTON.

STATISTICS,

OUR DEPENDENCE.

"Let the sky rain potatoes; let it thunder
to the tune of 'Ta, ra, ra, Boom de ay;' hail
Kissing Comfits; snow eringoes; let there
come a tempest of provocation. I will shelter me here."

—*Merry Wives of Windsor*, Act V, Scene 4.

JAMES T. HOILE.

COMMERCE.

"Why, then, the world's mine oyster,
Which I with sword will open."

—*Merry Wives of Windsor*, Act II, Scene 2.

JOHN H. SPRAGUE.

TRANSPORTATION.

"And the Imperial Vo'tress passed on
In maiden meditation, fancy free."

—*Mid-summer Night's Dream*, Act II, Scene 1.

LOWELL M. PALMER.

LABOR AND CAPITAL.

"I have a bag of money here that troubles me."

—*Merry Wives of Windsor*, Act II, Scene 2.

"I can get no remedy against the consumption of the purse;
The disease is incurable."

—*Second part King Henry IV*, Act I, Scene 2.

THOMAS C. SMITH.

OUR LAWYER.

"Justice—the law—my ducats—"

—*Merchant of Venice*, Act II, Scene 8.

ERNEST C. WEBB.

OUR POLITICIAN.

"Honor pricks me on. Yea, but how if
honor prick me off when I come on."

—*First part King Henry IV*, Act V, Scene 1.

WILLIAM BROOKFIELD.

OUR PRESIDENT.

"This is the most omnipotent villain
That ever cried stand to a true man."

—*King Henry IV*, Act I, Scene 2.

"A combination and a form, indeed,
Where every god did seem to set his seal
To give the world assurance of a man."

—*Hamlet*, Act III, Scene 4.

CHARLES N. JUDSON.

"GOOD NIGHT."

"Well, let's away, and say how much is done."

—*Macbeth*, Act III, Scene 3.

The president of the association, Henry B. Haigh, presided, and his graceful and felicitous introductions of the different speakers were fully appreciated by the company. In the absence of Herman C. Mechling, F. W. Wurster responded in a happy speech to the toast, "Our Progress," and John F. Talmadge, Major Paige and Colonel

tention will be given to the consideration of a number of important subjects closely related to the welfare of the trade. Among these are the following which will receive careful consideration:

The best mode of employing traveling salesmen;

The best remedy to prevent the cutting of prices;

at New York, Boston, Philadelphia and other points is referred to as a reason for considering it feasible to have one in London. Referring to the scope and advantages of such an association, the *Ironmonger* says:

A common center for the various branches of the trade would be a great convenience socially, as well as in a business sense; hence, we hope our

friends will not let the idea drop out of sight without giving it careful consideration, to say the least. If the proposal is adopted, organization and some money will be needed; but the trade is not deficient in either of these requisites, and we fancy that the project only requires a start to render it entirely successful. The club could be run on lines precisely similar to those which obtain in other London establishments of the same kind; and we think it ought to be and would be successful from the very start if the right men take hold of the idea in the right manner. Social intercourse between those engaged in the Metal trades would probably lead to certain business changes for the better, and the mere fact of there being a common center for all branches of the trade would be distinctly beneficial to all concerned. The subject can be discussed in our columns, and it ought in that way to be possible to ascertain the feeling of the trade with regard to it.

Bicycles as Hardware.

BY A. H. HOPE.

THE HARDWARE dealer has confined himself heretofore almost exclusively to the beaten paths of his predecessor. In all other lines of trade the retailer has branched out and ignored the traditions surrounding his special field. He has pulled down the walls of separation and considered the whole field of business open to him if there was profit there. But the Hardwareman has seemed to draw a circle about himself beyond which it was difficult to coax him to extend his line.

There are three lines, all of them profitable and closely connected with the Hardware trade, that have been ignored by the large majority of Hardware dealers:

1. GUNS AND AMMUNITION;
2. FISHING TACKLE;
3. BICYCLES.

As to Guns and Ammunition, I can remember the time when this profitable branch was almost tabooed by the retail Hardware trade. A little Powder and Shot, a few Caps, a few pounds of Bar Lead—these were all in that line that could be coaxed upon most dealers, and more than many of them would buy. It seemed to be a matter of business ethics that everything connected with hunting goods belonged of right to the gunsmith.

In Fishing Tackle one could sell a small assortment of Hooks and Lines to the Hardwareman, but there he would stop, and it is only within a few years that he is learning his mistake in the past in this.

With the coming of Base Ball Goods into prominence one would have supposed that Balls and Bats would naturally gravitate toward the Hardware store, but such has not been the case. Better stocks of these goods are kept by the Sporting Goods houses and in some small towns by the grocer or dry goods dealer than by the Hardwareman.

The same mistake was made with Bicycles.

They were looked upon as being entirely outside of any such staple.

steady stock as that of Hardware. In most cases some bright young fellow managed to buy a Wheel at a discount from list prices, and at once set about selling one to a friend. He succeeded and wanted an agency; secured it and pushed his sales.

The retail Hardwareman has no excuse to-day for permitting this business to pass his door. Whether general Hardware business is better or not, whether trade generally improves or not, this fact is beyond dispute: the Bicycle business and trade is here to stay, and machines will sell, be the financial future bright or dark.

The day of

Fancy Prices

seems to have passed. Prices have by no means reached their level, but they will get there inevitably, because of the large number of new Wheels for which a market must be found, as well as the increased purchasing power of a dollar, owing to declines in wages and in prices of all products.

The rising generation are going to ride Wheels. They will be used for pleasure and for work. The mechanic will use them in city and country going to his labor. Children must have them. Women will, more and more, claim them for their own. What at first was a mere curiosity, a wonder, a fanciful creation, later became a really useful machine, and is now a necessity. Its horizon will broaden as the price brings it within the reach of the masses, and a wise Hardwareman will put himself in touch with this trade at once, and commence to identify himself with some good machine.

What Shall He Buy?

The answer is—the best machine for which he can secure the sole agency for his town or city.

No one machine is so pre-eminent in all points—quality, price and reputation—as to make one feel that if he cannot get that he must get none. If there was such a machine its price would be correspondingly higher, so that the man selling another Wheel could offset reputation by concessions in price. We all admit the superior quality of Ames' Shovels, yet we sell large quantities of other brands, too.

Secure the

Agency

for a good machine not already represented in your place. If you are not a good rider, learn to be one. Use a Wheel as often as you have occasion to go out of the store. Carry only a small line in store, unless you are able to pay for a larger stock. Secure from your company a large supply of literature of the Wheel. Send this where it will do good. Talk your new line to every customer. Fit up a room, or a track in your yard, where Wheels can be shown. Teach people to use your Wheel.

If you can sell on the installment plan make your price one that will pay for this. If you sell on credit pro-

tect yourself as you would if you were selling a mowing machine.

Do not carry a

Stock

larger than is necessary, even if your factory will send you goods on consignment. Wheels going in and out are a good advertisement. If sent to you on consignment, see that your insurance policy is made to cover such goods.

Do not overstock on the parts and appurtenances belonging to Wheels. Buy cautiously till you know your trade as you know it in Nails or Hinges. But lay in a small, though full, assortment of such goods, for they will sell and should pay large profits.

Do not take the agency of more than

Two Makes

of Wheels, if you decide to have more than one, but the best result is obtained by the "one idea" man in the long run, providing always that he has a Wheel that will do exactly what he claims and expects of it.

In the large cities, where are Bicycle clubs and tournaments, the dealer must advertise largely and contribute liberally to prizes and for races.

The cautious country dealer will not copy this except for an occasional event like a local fair, when prizes offered boys will lead to rivalry and trade. The Bicycle business cannot be increased profitably by making a bargain counter of it, but must be pushed by learning who in the community are interested in a Wheel or are talking of getting one, and then seeing such persons at once.

A considerable business is done in

Repairing

Bicycles, and an agent who also has a repair shop has a decided advantage over his competitors, as well as a source of revenue. The Hardwareman who employs a tinner can open a repair shop of his own at no expense. If he has no tinner, he should arrange with a mechanic in his town to do repairs for him, unless he is something of a mechanic himself, as most Hardwaremen are. In that case it would pay him well and give him prestige as an agent to perfect himself in the work, so that he could do his own repairing.

In Conclusion,

it can safely be said that the Bicycle business is one worthy the immediate attention of every Hardwareman for the money there is in it and in all things connected with it, but that he should not rush into extravagant stock nor expensive advertising; he should carefully feel his way.

ADOLPH BUTZE, St. Louis, Mo., whose advertisement appears in another column, is a manufacturers' agent, and handles Railroad, Packing House and Contractors' Supplies. He also carries in stock in his warehouse in St. Louis a full line of White, Colored and Wool Waste. Mr. Butze is also agent for Latrobe Steel Works, United Rubber Company, and Geo. Griffiths Company.

Fifty Years in the Hardware Business.

JOHNN DENNIS of Cleveland, Ohio, who has been connected with the Hardware business for more than 50 years, has just retired from active service. He was born in Folkestone Parish, Kent, England, in 1824, and came to this country when 12 years of age. When about 19 years old he became a clerk in the establishment of Wm. Bingham & Co., Cleveland, and has remained in their employ ever since, having spent over 50 years of service with this house without the loss of a day's salary. He owns a comfortable home and 10 acres of ground near Cleveland, and in recognition of his long and faithful service the W. Bingham Company have given him a comfortable pension. It is his expectation to spend the remainder of his days at his home in ease, and as his health is good and his faculties well preserved, he will doubtless enjoy for some time to come his well earned rest. He is universally liked and respected.

Trade Topics.

Requests for Quotations.—A Virginia Hardware concern, referring to their custom of writing manufacturers for printed matter and prices, express the opinion that perhaps the manufacturers think they spend postage in vain when answering such inquiries, as they do not always receive immediate orders for the goods. Our correspondent states, however, that in many instances months after receiving the information, or even after a longer time, orders are sent to the manufacturers for the goods or are given to parties handling them; and that inquiry for the goods of wholesale houses often causes them to carry the line that they had not before handled. It is the custom of the concern, when seeing illustrated descriptions of new goods, to write for prices and to learn who handle the goods as agents or otherwise in the markets in which the concern principally buy. Circulars or catalogues received as a result of these inquiries are placed on file, to refer to when they are in need of the goods, and so they may know where they can be obtained when wanted in too small quantities to justify a shipment from a distant factory.

Points of Wire Nails.—A Hardware house in a Southern State suggest that Wire Nail manufacturers bevel Nails on two sides instead of pointing them as at present. Many of their customers complain of the present point as splitting work badly, especially the larger sizes, which they think would not occur if Nails were beveled on only two sides.

Postal Card Quotations.—A suggestion is made by a wide-awake Hardware concern that manufacturers and jobbers should inclose prices or quotations on goods in envelopes, instead of sending them on postal cards. These,

it is explained, may be put in other persons' post office boxes by mistake, or may be read through the glass in the boxes of those for whom they were intended. In either case the public dissemination of private advices would be prejudicial to the interest of the retailer.

Net Prices of Galvanized Sheet Iron.

"THE METAL WORKER" has issued a hanger, $8\frac{1}{2} \times 12\frac{1}{2}$ inches in size, giving the net prices of Galvanized Sheet Iron in gauges from No. 10 to No. 30, at discounts from 65 per cent. to 85 per cent. discount from the present list. The gauges, based on weights, are according to the United States standard which came into effect July 1, 1893, the Black Iron being $2\frac{1}{2}$ ounces per square foot lighter than the Galvanized Sheets of the same number as given in the table. It will be found convenient for reference.

Bicycle Notes.

E. C. STEARNS & CO., Syracuse, N. Y., supply stationery to their Bicycle agents, including tastefully engraved letter heads and envelopes to match. The engraved heading occupies the left and center portion of the sheet near the top. A Stearns Special weighing $21\frac{1}{2}$ pounds is shown, partially surrounded by scroll work; to the right of which is the company's trade-mark and the words "Agency for Stearns Bicycles." Names, location and other matter desired by the agent are printed on the stationery. This serves as an advertisement for the company, and at the same time connects the wheel, in the mind of correspondents, with the name of the agent.

THE NEW YORK BELTING & PACKING COMPANY refer to the prominent features of their Key tire, among which are mentioned simplicity, lightness and resiliency. A turn of the key tightens or loosens the cover so that the inner tube may be examined or repaired. It is also remarked by the company that recent improvements in the Whippet tire has resulted in increased flexibility and toughness of cover, together with lapped inner tube. The Whippet is made light for racing purposes, weighing, it is stated, not over 2 pounds to the pair.

MORGAN & WRIGHT, Chicago, issue a pamphlet of 59 pages devoted to pneumatic tires. Illustrations are given of seven styles of tires made by the firm; also of the inner tube with closed ends. In addition to these, Pumps and repair outfits are shown, and much information given regarding the use and repairing of tires and the fabrics of which they are made.

W. G. SCHACK, Buffalo, N. Y., issues a catalogue with the front cover in colors devoted to 1894 Emblem and Schack Bicycles; also those for which he is general wholesale and retail agent, including the Smalley, New Mail, Bison and Yale machines. Emblems are shown in light roadster; No. 2, ladies' Emblem, boys' and girls' wheels. These range in list from \$100 to \$65. The Schack Safety is shown in one pattern, listing \$125. A line of Saddles, Bells and other sundries are also illustrated.

ANGLO-AMERICAN IRON & METAL COMPANY, 218 Pearl street, New York, with works at Orange, N. J., make a

specialty of cycle material, including, it is stated, everything pertaining to cycle manufacture and repair. The company represent for the United States Perry & Co., William Brown, Butler's Cycle Fittings Company, Parker & Sanders, Thos. Smith & Co., and William Gay. The catalogue contains 59 pages, devoted to illustrations, prices and descriptions of goods.

Trade Items.

THE GILBERT & BENNETT MFG. COMPANY, 44 Cliff street, New York, and 148 Lake street, Chicago, call attention in their advertisement in this issue to their ability to make prompt shipments of Poultry Netting and Wire Cloth. They carry large stocks in both their New York and Chicago warehouses. This announcement is of interest to the trade in view of the fact that with some manufacturers there is probability of a shortage in these lines of goods.

IN THEIR advertisement in this issue Morley Bros., Saginaw, Mich., call attention to their well-known Store Ladder, referring especially to the ten-years' guarantee which goes with each Ladder sold. They make the point that to the Hardware merchant who adopts them they more than pay their cost in one year.

WALBRIDGE & CO., Buffalo, N. Y., in their advertisement on another page, illustrate some Iron Reservoir Vases which they are putting on the market. They are offering nearly 100 styles and sizes of these Vases at list prices of from \$6 to \$100 each, so that the trade is given an ample variety to select from. These Vases are made with a reservoir for water, from which a constant and even supply of moisture is drawn by capillary attraction, and it is claimed that they do not need watering oftener than once in 10 or 15 days.

R. W. FORBES & SON, after 42 years' occupancy of the premises at 14 South William street, New York, removed on April 23 to the New York Produce Exchange.

GEORGE B. MILLER, for the past 27 years with Wallace & Sons, having for a year or more had the immediate supervision of one of their departments in New York, is about to again represent them on the road in the West and Southwest. He hopes in the near future to renew the many business acquaintanceships acquired during former trips.

THE CLEVELAND NOVELTY COMPANY, Cleveland, Ohio, are putting on the market a line of Tents; and call special attention to their Sportmen's Tent, which is finding sale among dealers in guns and sporting goods.

WILMOT & HOBBS MFG. COMPANY, formerly at 20 Murray street, New York, have moved into new quarters at $2\frac{1}{2}$ Murray street, near Broadway. They now have the street floor, floor above and basement. They carry, as heretofore, a full stock of goods made by them.

LUFKIN RULE COMPANY, Saginaw, Mich., whose New York office has been at 20 Murray street, are now located at $2\frac{1}{2}$ Murray street, with Wilmot & Hobbs Mfg. Company, where a stock of their goods is carried.

THE TRADE will observe in the advertising pages the announcement of Wrightsville Hardware Company, Wrightsville, Pa., to the effect that they have purchased from the Shepard Hardware Company, Buffalo, N. Y., patterns, trade-marks, &c., for Blind and Gate Hinges and other goods which they are now putting on the market.

Surpluss, Dunn & Alder.

SURPLESS, DUNN & ALDER, who for a number of years have been located at 97 Chambers street, New York, have been compelled to enlarge their facilities. To accomplish this they have leased the store floor and two basements at 15 Murray street until recently occupied by the H. & D. Folsom Arms Company, and are now in their new quarters. The floors, each 25 x 100 feet, have been renovated and rearranged to meet the requirements of their business. The street floor will be used exclusively as a salesroom and for office purposes. Sample cases, in which will be displayed goods of the various manufacturing concerns whose product they deal in, are now in place. The remaining floors will be devoted to the storing of stock with which to supply nearby jobbers and facilitate hurried export shipments and the packing and shipping of orders which can more advantageously be shipped from this point than from factory. A new elevator has been put in, and the premises will be lighted by electricity.

The "Coming" Woman is Here.

WE GIVE below a letter received by a prominent Cutlery firm from a Western woman, and it not only tells its own story but tells it exceedingly well:

—, Iowa, April 5, 1894.

DEAR SIR: I have come in possession of your address and I know your Cutlery by reputation. Do you employ traveling agents on the road? You will perhaps say, "No; not women." I have been in the business a greater part of the time for several years and I have always had good success, for I always deal with the men, and that is where the secret of my success lies. I never deal with the women; a woman can't do that. I leave that part to my husband and I take another line.

If you have never employed a woman to travel for you, you don't know of the success they have and the advantage they have over men. My husband is on the road all the time for a Chicago firm and I adopt this business from choice rather than necessity. I am 25 years old, a graduate of — College in the class of '91.

I have never been in just your line of goods, but I think undoubtedly I would make a success of it, for I can hustle and make people buy to get rid of me.

Should you possibly consider my proposal favorably, let me hear from you at once. I do not mean to say that I would canvass, for that is out of my line; but I can sell as much to retail dealers as any man that ever carried a grip.

My address for two weeks will be: —, &c.

Price-Lists, Circulars, &c.

THE KNAPP & COWLES MFG. COMPANY, Bridgeport, Conn.: Garden Tools, &c. Circulars contain illustrations and prices of Garden Trowels, Weeding Hook, Strawberry Forks, Garden Line Reels, Shuffle Hoes, Tree Scrapers, Floral and Children's Sets, Pruning Shears, Shoe Stretchers, Tire Bender, Tire Upsetter, Hack Saw Frames, &c.

VULCANIZED FIBER COMPANY, New York and Wilmington, Del.: Hard and Flexible Fiber. A catalogue is devoted to prices, descriptions and illustrations of goods made from Fiber, including Sheets, Sticks, Rods, Tubing, Condenser Ferrules, Slides, Rollers, Track Washers, Cans, Insulating Saddle Staples, &c.

WM. FRANKFURTH HARDWARE COMPANY, Milwaukee, Wis.: Neptune Fishing Tackle. A catalogue of 57 pages illustrates, with descriptions and prices, Rods, Reels, Hooks, Flies, Trolling Baits, Artificial Baits, Lines, Nets, Minnow Buckets, Bait and Tackle Boxes, Boats, &c.

MARK MFG. COMPANY, 197 to 207 South Canal street, Chicago: Catalogue of Plumbers' Tools, Drive Well Points and Well Supplies. This is a catalogue of 32 pages, mainly devoted to Tubular Well Supplies. The first 11 pages treat of Well Points of a variety of patterns. Then follow Couplings, Strainers, Drills, Augers, Valves, Cylinders, Plunger Leathers, &c. The company manufacture also the Mark Grooved Edge Rubber Bucket for Chain Pumps, Open Hinge Malleable Iron Pipe Vises, Gas Pliers, Melting Ladles, Hand Pipe Cutters, Pipe Benders, Mechanics' Clamps and a variety of small Hardware specialties in Malleable Iron. All the goods shown are manufactured by the company.

FARWELL, OZMUN, KIRK & Co., St. Paul, Minn.: Guns, Sporting Goods and Fine Fishing Tackle. A hanger, upon which are given the game and fish laws of Minnesota and nine adjacent States, showing between what dates game and fish may be killed or taken.

G. L. VAN NAMEE MFG. COMPANY, Syracuse, N. Y.: Little Giant Steel Truck. The Truck is made entirely of metal, with wide tired wheels, well fitted bearings, and adjustable clamp to grip the top of barrels. It weighs 14 pounds and is designed for use in factories, stores, mills and homes, for moving flour, sugar, ash, garbage barrels, &c.

ELECTRIC LETTER BOX COMPANY, Meriden, Conn.: Alarm Letter Drop or Box, &c. A catalogue is devoted to Electric Alarm Letter Drops or Boxes, Mechanical Door Bells, Call Bells and Bicycle Bells. The Alarm Letter Box is so constructed that whenever a letter is inserted in the opening a bell is rung in any desired part of the building.

THE J. D. SMITH FOUNDRY SUPPLY COMPANY, Cincinnati, Ohio: Foundry Supplies. Circulars relate to Pattern Letters and Figures, Brunnell's Wire Wheel, Plumbago or Silver Lead, Radiant Facings and Monk's Molders' Solid Steel Tools.

SANDWICH ENTERPRISE COMPANY, Sandwich, Ill.: Aerating Pump. The Pump is of the pitcher spout pattern, designed for cisterns and shallow wells. The Pump forces air into the water at the bottom of the well or cistern, which it is claimed agitates and aerates the water thoroughly, removing bad odors and leaving it pure.

The Director of the Mint in his final estimate places the silver production of the United States for the calendar year 1893 at 60,000,000 ounces. Colorado stands at the head of the list with an output of 25,838,600 ounces, an increase of nearly 2,000,000 ounces over the returns for 1892, which is very nearly the aggregate increase shown for all mines in 1893 over the previous year. The coining value of the silver produced in 1893 was \$77,575,757, but its market value at present prices is less than half this amount. The following table gives the production by States in fine ounces where the amount was as large as 1000 ounces:

	Ounces.		Ounces.
Alaska.....	9,600	New Mexico.....	458,400
Arizona.....	2,935,700	N. Carolina.....	13,400
California.....	470,100	Oregon.....	11,800
Colorado.....	25,838,600	S. Dakota.....	140,400
Idaho.....	3,910,700	Texas.....	349,400
Michigan.....	43,600	Utah.....	7,196,300
Montana.....	16,908,400	Washington.....	152,700
Nevada.....	1,561,300		

It Is Reported—

California.

That Fred. Barcoff's Hardware store at MADERA was destroyed by fire on the 20th ult.

Illinois.

That Charles Weber of MILLINGTON is erecting a two-story building which, on completion, will be occupied by his Hardware business.

That Willis & Bender, at LEE CENTER, have disposed of their Hardware store to Harvey Hulbert, who will continue the business at the old stand.

That the store of William Houseworth, MASON CITY, is now being conducted by Paul Enlows, who has purchased the business.

Indiana.

That Sumner & Heffner's Hardware store, at HILLSBORO, was entered by thieves on the 19th ult., but little of value was secured.

Iowa.

That Charles Betler is considering the advisability of opening a Hardware store at PRAIRIE CITY.

Kansas.

That J. C. Guinn, GREAT BEND, has disposed of his stock of Hardware to I. N. Woodward.

That George Smies has purchased an interest in the Hardware business of Keener Bros., CLAY CENTER, and hereafter the firm will be known as the Keener Bros. Hardware Company.

Massachusetts.

That in a large fire at MARLBORO on the 25th ult., the store of W. H. Hill suffered damage to the extent of \$2500.

That E. A. Buck & Co., dealers in Hardware, &c., PALMER, are to move into larger quarters about July 1.

That J. R. Todd & Co., WARREN, who recently purchased the Stove and Tin store of W. A. Putnam, have given up the business and removed to Natick.

That a two-story storehouse is being built at NORTH ADAMS, which on completion will be occupied by J. M. Darby.

Michigan.

That Jilbert & Lang have opened their new Hardware store at HOUGHTON. A tin shop will be run in connection with the store. Mr. Jilbert will manage the business. He was formerly connected with the firm of Mondlock & Yagle of HANCOCK and also with J. Pearce at DOLLAR BAY.

That the store of the Phillips Hardware Company, at BLISSFIELD, was burned out on the 23d ult. The loss is estimated at \$1500.

Minnesota.

That thieves entered K. Anderson's Hardware store, at LAKE BENTON, on the 18th ult., and carried off a small quantity of Firearms and Knives.

That James Becker has purchased the Hardware stock of Wm. Thoman of HOKAH.

That a partnership has been formed between C. A. Smart and Frank Butler in the Hardware business at AUSTIN.

That the Hardware firm of Clark & James, at ORTONVILLE, have dissolved. Mr. James will continue.

That Mr. Johnson, in the Hardware business at WYKOFF, has sold out to Mr. Boyer of FOUNTAIN.

That Phelps & Co. have succeeded Byron D. Wilson, Hardware merchant, at EXCELSIOR.

That the Martin Company, Hardware merchants, YOUNG AMERICA, are going out of business.

That Heogh & Qually are successors to Charles Heogh at SPRING GROVE.

That Lord & Pokornosky are conducting the business formerly carried

on by Jno. Pokornosky at SILVER LAKE.

That Bryant & Andrews, Hardware dealers, MONTICELLO, have sold out to M. B. Bryant.

Missouri.

That J. H. Bockhorst, St. LOUIS, has removed from 1324 Franklin avenue to 1220 Franklin avenue, where he has a much larger and more convenient store.

That E. Bueltman, St. LOUIS, has repurchased his old Hardware and House Furnishing Goods store located at Fifteenth and Monroe streets.

Montana.

That the Bee Hive Hardware Company of DILLON have sold out to G. W. Dart.

Nebraska.

That Harrington Bros. Hardware store, at PAWNEE CITY, was burglarized of \$60 worth of goods on the 16th ult.

That Taylor Bros. of MINDEN have opened a new Hardware store at TRUMBULL.

New York.

That George S. Pierson & Son of CORNING have disposed of their Hardware store to James Kiff of COVINGTON.

North Dakota.

That F. C. Walter, dealer in Hardware at MINTO, is disposing of his business.

Ohio.

That Albert Chandler's Hardware store, at SYLVANIA, was burglarized a short time since, the value of the stolen booty being about \$100.

That the Hardware store of A. J. Lash, at CANTON, was robbed of \$50 worth of Knives, Razors, Revolvers, &c., on the 24th ult.

That Webster & Baird's Hardware store, at SCIO, was burned out on the 22d ult.

That Frank and Wilber Drees have purchased the stock of Stoves, Hardware, &c., of the late firm of Nesbitt Bros., XENIA. The store will be remodeled and a fine new front put in.

That Julius Alexander is the proprietor of a new Hardware store at BRIER HILL. The store is being managed by Reese Williams.

Pennsylvania.

That Seligman & Co. of MAHANAY CITY have purchased the Hardware business of E. J. Fry of POTTSVILLE. The business, which was established by Mr. Fry many years ago, is one of the largest of its kind in the county. The change of ownership has been necessitated by the illness of Mr. Fry, who was unable to give his personal attention to the business.

South Dakota.

That F. G. Reineck has sold his well established Hardware business at CANISTOTA to F. M. Staples & Co., who have consolidated it with their Implement business, their aim being, we are advised, to build up a substantial establishment, as the two lines can be worked together successfully.

Texas.

That W. M. Kellett has been succeeded in the Hardware business at WACO by McLendon, Duncan & Co.

Wisconsin.

That Frank Schwoebel and W. E. Radtke have purchased the Hardware business of Jacob Hahn, at LA CROSSE. Mr. Schwoebel has been with Mr. Hahn for several years.

That Oliver Bros., dealers in Hardware, JONESDALE, have removed to EDMUND.

That Jussie R. Sharp, in the Hardware business at IRON RIVER, has been succeeded by Dittman & Russell.

The Hardware trade throughout the country are requested to report busi-

ness changes, improvements and other matters of trade interest suitable for mention in this department.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

White Lead.—Slow business and irregular prices are the most prominent features at the present time. There is hardly the average volume of trade between jobbers and their customers, and the jobbers are very cautious buyers owing to the uncertainties connected with the sharp rivalry existing between conflicting producing interests. Some "old process" Lead made by independent corrodors is still offered, in carload lots, at $4\frac{1}{4}\phi$ less a discount, and "new process" is readily secured at that rate. Even lower prices are, it is said, made at some Western points. The common quotations are $4\frac{1}{2}\phi$ for old and $4\frac{1}{4}\phi$ for new process. Lead in Oil is quoted at 5ϕ @ $5\frac{1}{2}\phi$ according to brand, with lowest open quotations made by independent grinders. Mixed Leads are selling at all manner of prices.

Red Lead.—Sales of American brands have been moderate and prices are still irregular, with the tendency in buyers' favor, but showing no positive change. Foreign brands are also in limited demand and prices remain at about $5\frac{3}{4}\phi$ @ $6\frac{1}{4}\phi$, according to delivery and size of lot.

Litharge.—Of the lower grades fairly large sales continue to be made and the market is, in this respect, quite favorable. Prices are still very low, however, and competition is keen enough to prevent improvement. The bulk of business is at $4\frac{1}{2}\phi$ @ $4\frac{3}{4}\phi$. For the finer grades used by grinders there is only limited demand at present, and the moderate business passing is chiefly at old prices.

Orange Mineral.—Sales of foreign makes are running somewhat below the average for this season of the year and the demand is slow. Prices show very little change, but seem rather weak. In domestic there is only a moderate business, the bulk of which passes at former prices.

Zincs.—There is still some unevenness to the tone of the market for American Oxide and also a little irregularity in prices, the result of slowness of sales. However, the shading of current quotations does not appear to be greater than the concessions that

Chalk and Whiting.—No change has taken place in the market for Block Chalk. Only a routine business is passing. Whiting finds very fair sale and, while individual purchases are mostly rather small there is enough business to keep prices very steady.

Oils and Turpentine.

Linseed Oil.—The features of the market differ in no essential particular from those that have been prominent for several weeks past. There is still more or less disparity between prices for city made and out of town Oil, but the margin has not widened nor does it appear that competition has been livelier. Demand at present is chiefly for moderate quantities and from the smaller buyers, but the distribution in a jobbing way has increased more or less.

Cotton Seed Oil.—Market value of crude has been firmly maintained on the basis of 30ϕ for prime stock, and refined has ruled steady at 33ϕ @ 34ϕ for prime Summer Yellow. Only a moderate business has been done here, but considerable sales were made of Oil to be shipped in tank cars from the mills to buyers' works. This business served to give the market quite substantial support.

Lard Oil.—Prices have been somewhat irregular on the basis of 63ϕ @ 65ϕ for prime Oil, and, upon the whole, the market has shown rather soft tone. Buyers are taking hold indifferently, since consumption is rather slow and general conditions free from suggestion of any important advance in the immediate future.

Fish Oils.—Moderate sales have been made of crude Menhaden Oil at 25ϕ @ 26ϕ , but hardly anything done in Sperm or Whale. Sellers' prices for the latter remain unchanged. In the pressed and bleached products only routine business is passing and prices remain without important change.

Miscellaneous.—Common Olive Oil in barrels is still rather weak, with sales at 58ϕ on the spot. Coconut Oils are just about holding their own in price, but sell slowly.

Spirits Turpentine.—The market has undergone very little change. Price has remained almost stationary at 30ϕ during the week and only ordinary dealings have passed.

Whisson's Improved Pig Forceps.

The Whisson Forcep Company, La Mars, Iowa, are offering improved pig forceps as herewith shown. The forceps are described as being made of malleable iron, tinned to prevent rust, and having smooth surfaces, so as not to



Whisson's Improved Pig Forceps.

have previously been made. Foreign brands find limited sale and prices remain somewhat uneven.

Colors.—The associated manufacturers have reduced their prices for No. 40 Carmine to \$2 for bulk, \$2.10 for 1-lb bottles and \$3 for 1-ounce bottles. Aside from the above no changes have been announced in prices of leading lines of Dry Colors, but the general market has a somewhat ragged appearance and is slow for this season of the year. Oil Colors and Mixed Paints are meeting with very fair sale, and in some lines the movement is running ahead of the late average.

cause inflammation. It is stated that when the points are open 2 inches the handles are only spread $1\frac{1}{4}$ inches at the shoulder, $13\frac{1}{2}$ inches from the points; that the points are about $\frac{1}{4}$ inch apart when the handles are closed and that hard pulling upon the forceps does not increase the pressure upon the animal. The point is made that the instrument can be used successfully and without injury upon a small animal equally as well as upon a large one, and that the forceps can be opened to such a width as to receive the pig's head or grasp its foot and hold it securely.

The Bommer Spring Hinges.

Bommer Brothers, 351-353 Jay street, Brooklyn, N. Y., are offering compounded spring hinges in four styles, as illustrated herewith. The principal feature of the hinges is the compounding of the springs. It is explained that in these hinges each spring has one or more auxiliary springs within

screws. Box hinges are made both single and double action, as shown in Fig. 4, designed for water closets having marble jambs, the box being clamped onto the marble. These are also packed with bolts and screws. It is stated that all parts of the hinges are made by special machinery and are interchangeable, and that duplicate parts can always be obtained. The manufacturers refer to the hinges as excelling in workman-

order or to require repairs; also that the hanger will stay where placed as long as the building lasts, and will hang any width curtain or shade fixture without moving the hanger from its original position. The point is made that the hanger is particularly adapted to use in rented houses, as after the hanger is in place no other screw holes will ever be necessary, no matter what width shades the tenant uses. The

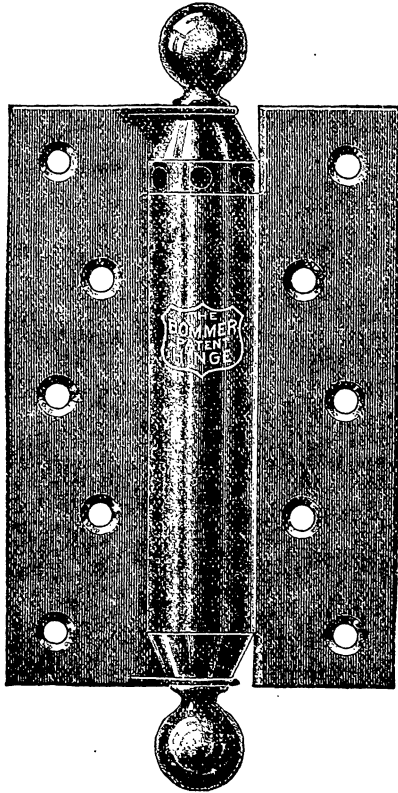


Fig. 1.—The Bommer Single Action Spring Hinge.

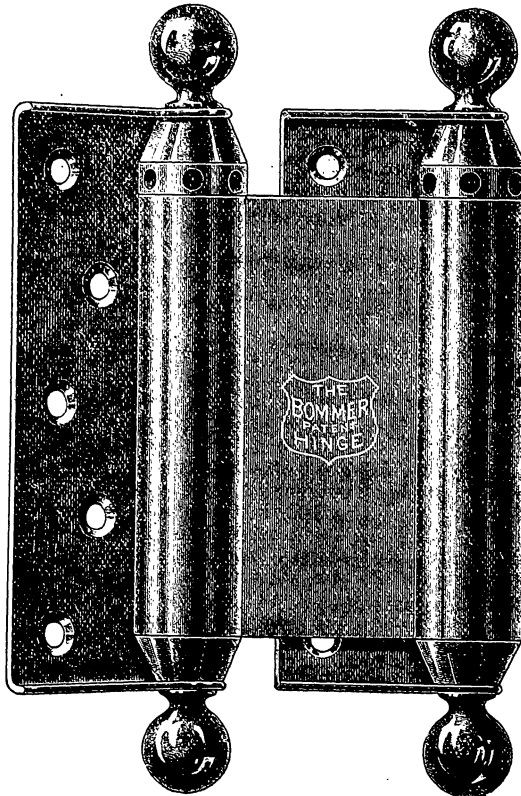


Fig. 2.—The Bommer Double Action Spring Hinge.

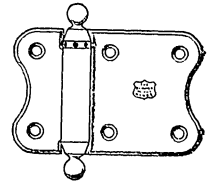


Fig. 3.—The Bommer Surface Hinge.

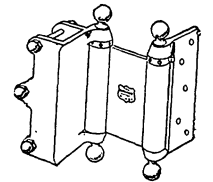


Fig. 4.—The Bommer Box Hinge.

the outer one, making the combined length of the springs nearly double or treble of a single spring hinge. It is claimed that compounding the springs not only increases the power, but makes the power more elastic, so that a lady or child can open the heaviest door with ease; also that the door will close gently. The body and leaves of the hinges are formed up from sheet steel, bronze or brass under pressure, and in such a manner that a section in the line of the greatest strain shows a deep double corrugation, which, it is remarked, gives great structural strength and makes the hinges practically unbreakable. It is stated that all the bearings are of steel; that breakage from excessive cold, sudden jars or accidental blows of a hammer when starting screws is avoided; that the tips and cones are turned from machinery steel; that the pintles are riveted to the tips at both ends, and that in bronze and brass hinges the pintles are riveted to nipples which are covered by caps, making it impossible, it is claimed, for the pintles to unscrew and drop out or for the tips to fall off. The point is made that the in-bending of the edges of the side flanges of the double action hinges, Fig. 2, forms a gauge for carpenters when applying, making double action hinges as easy to hang as a common butt, while it adds greatly to its strength and finish. The surface hinge shown in Fig. 3 is especially adapted to water closets having marble or wooden jambs; made to hold the door open or to keep it closed as desired, and are packed with bolts and

ship, durability, power, lightness of movement, finish and appearance.

The Salem Shade Fixture Hanger.

The W. A. South Company, Salem, Mass., are offering the shade fixture

hangers are furnished nickel plated, copper bronzed and japanned.

An Egg Timer.

A device to time the boiling of eggs without attention is described in a re-

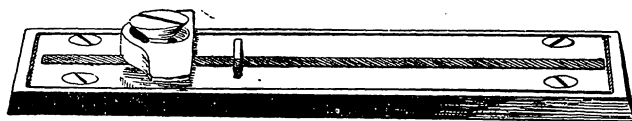


Fig. 1.—The Salem Shade Fixture Hanger.

hanger shown in Fig. 1. The plate of the hanger is made of a single piece of steel, while the screw and clamp are also of good material. In use any shade fixture manufactured, for example the one shown in Fig. 2, is fastened securely

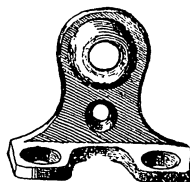


Fig. 2.—Representing any Shade Fixture.

under the clamp of the hanger and adjusted to any position in the slot. The manufacturers claim that there is nothing about the hanger to get out of

cent issue of the *London Ironmonger*. It consists of a metal basket large enough to contain two eggs, attached to a small slotted tube having a horse-shoe shaped base on which to stand. A small clock work gear with a face and hand is secured near the top of the tube. The clock work can be set to any desired time up to five minutes, and the setting of the dial to the required time winds up the mechanism so that it will run as long as is useful. The eggs being placed in the basket, the basket is lowered into the boiling water, when by moving a lever at the top of the dial box the mechanism is started. At the end of the specified time the mechanism releases a spring which is concealed within the tube and causes the basket and eggs to be elevated automatically and promptly from the water.

Goodell's Hand Drill No. 4.

The H. H. Mayhew Company, Shelburn Falls, Mass., are offering a geared hand drill, as herewith shown. The frame is of malleable iron and is re-

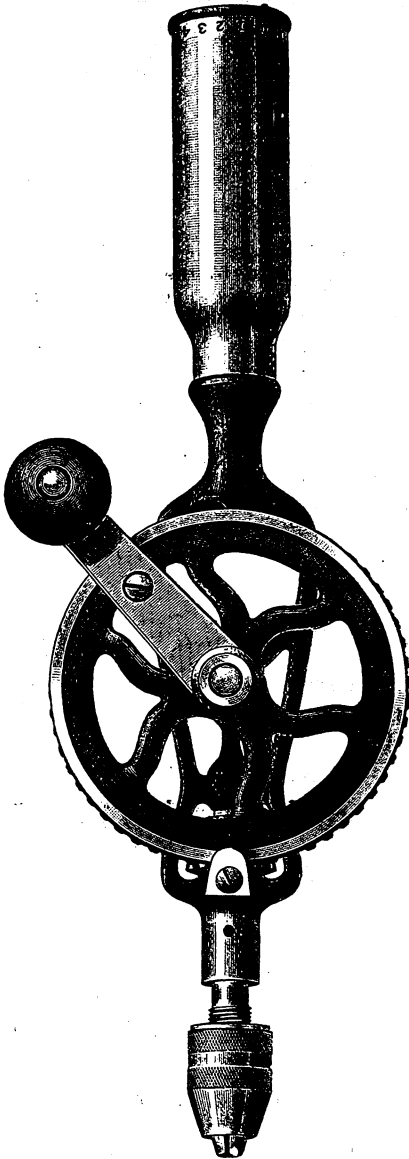


Fig. 1.—Goodell's Hand Drill No. 4.

ferred to as light and strong, and both gears as being cut to run smoothly without hitching. The steel chuck is well finished, with knurled nut and three hardened steel jaws, which, it is stated, will hold equally well the fluted drill points contained in the handle, or any twist drill from $\frac{1}{8}$ -inch down to No. 80. In this tool is embodied the

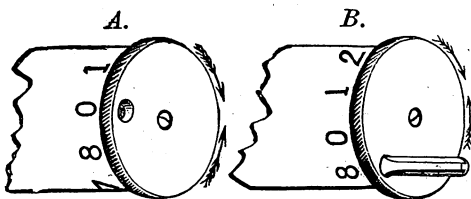


Fig. 2.—Views of the Top of the Drill.

same arrangement for holding the drill points in the handle as is used on the Goodell automatic drill No. 3. As shown in Fig. 2, the drill points are all contained in the handle, each in a separate compartment, the exact location of each size being designated by the numbers on the outside. When not in use the movable top cap stands at O, as

shown by A, and a pin is forced upward into the hole, preventing the cap from turning until such time as the operator desires to remove a drill point. By pressing upon the pin the cap may be turned to either right or left until the hole comes opposite the desired number, when the point can be readily removed, as shown by B.

Pure Water-Pure Food Filter.

The accompanying illustrations show a filter which the Coles Mfg. Company of Philadelphia are putting on the market. Fig. 1 shows the interior of the filter. In construction it consists of a brass or iron cylinder with a removable bottom having a discharge nozzle. Three perforated tubes are attached to a plate or diaphragm fitting into a recess or roll around the upper part of the cylinder, through which the water is carried to the center of the filtering material. Another perforated plate or diaphragm fits loosely in the lower rim of the cylinder, and is raised or lowered by a T handle screw passing through the removable bottom. A faucet is placed in the upper part of the cylinder in order that unfiltered water may be drawn when required. Water is supplied to the filter by means of a rubber hose connected to a supply nozzle in the head of the filter and attaching to a supply faucet by means of a special coupling containing a rubber washer with a small hole in its center which allows of a tight connection being made with the nozzle of any ordinary compression or basin cock or spigot. The filtering material used is a cotton pulp which is designed to absorb the sediments, impurities, and coloring

and over again without renewal. In the smallest size of the filter it is claimed that from 400 to 800 gallons of water may be filtered without cleansing

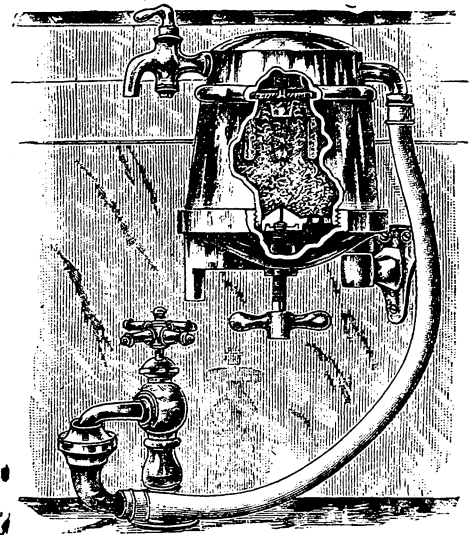


Fig. 1.—Pure Water-Pure Food Filter.

the pulp. The filter is affixed to a wall or wood work by a bracket which enters a socket in the cylinder bottom, and thus allows of easy removal when required. Adjustment of the filter to the water pressure is obtained by raising or lowering the bottom plate by means of the screw until the pulp presents the necessary compactness to secure thorough filtration with a quick supply. The heavier the water pressure the greater the compactness of pulp required.

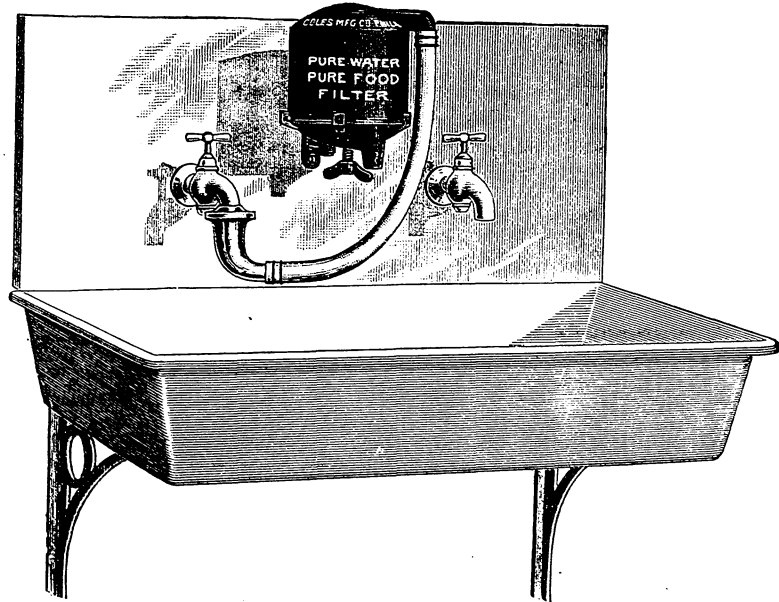


Fig. 2.—Small Size Filter.

matter contained in the water passing through it, and allows the water to pass out through the discharge in a steady stream, it is stated, of 25 to 30 gallons capacity per hour in the smallest size of the filter, as in Fig. 2.

Filtered water is discharged from the outlet at the bottom of the filter, at the left hand side, as shown in Fig. 1. By turning the supply faucet with which the filter is connected an immediate flow of filtered water is obtained. When the pulp becomes impregnated with foreign matter, it is taken out of the filter, washed in the same manner as a piece of cotton cloth and replaced. In this way the pulp may be used over

The filter is made in two sizes. Fig. 1 shows the larger size, made of brass, polished and nickel plated, or of tinned cast iron. Fig. 2 shows the smaller size of filter, made entirely of tinned cast iron, for kitchen or common use, without facilities for securing unfiltered water other than by removal of the filter tube. The filter is also made of special form for permanent attachment. The makers claim that the filter embodies the following advantages: Indestructible filtering material capable of being easily and thoroughly cleansed; thorough and rapid filtration, with little diminution in delivery, and adaptability to any pressure.

Parker's Victor Vises.

The Charles Parker Company, Meriden, Conn., are introducing a line of

self adjusting back jaw, which automatically adapts itself for holding wedge shaped pieces. The steel faces of the vise are milled and fitted to the

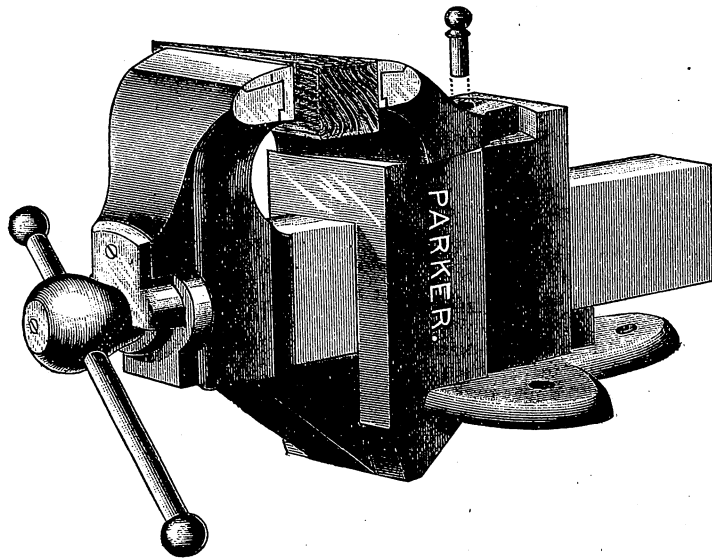


Fig. 1.—Parker's Parallel Victor Vise.

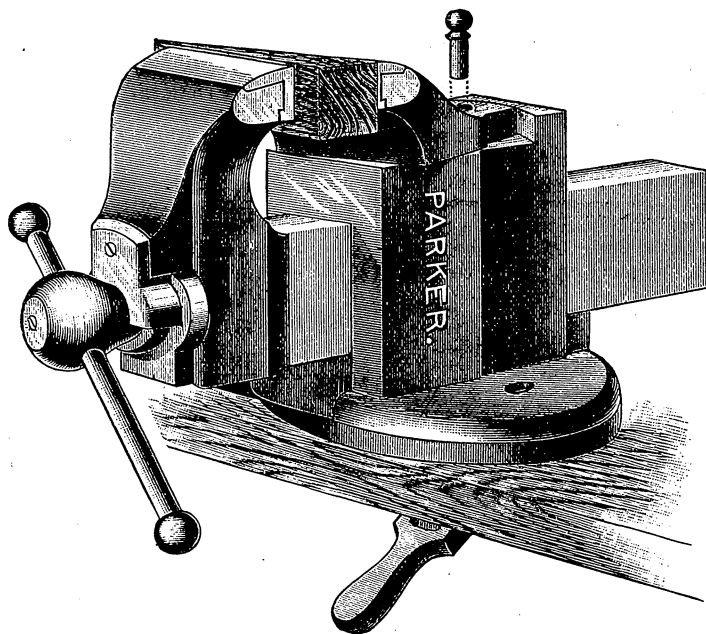


Fig. 2.—Parker's Swivel Victor Vise.

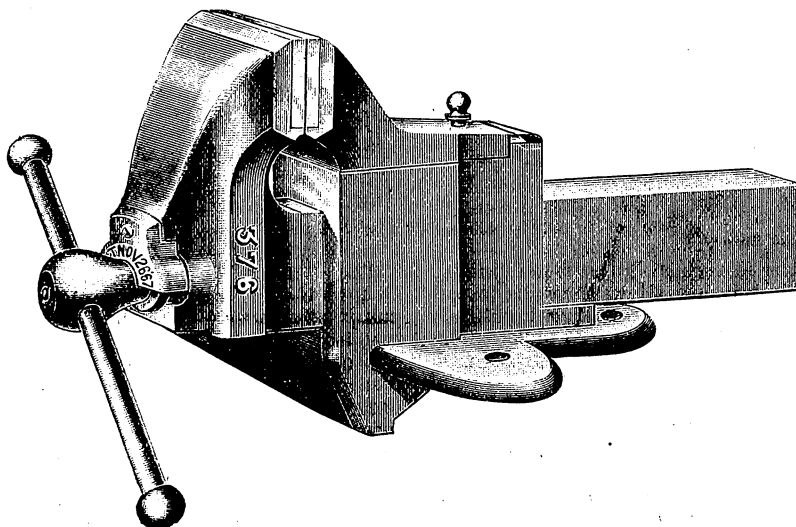


Fig. 3.—Parker's Victor Wood Worker Vise.

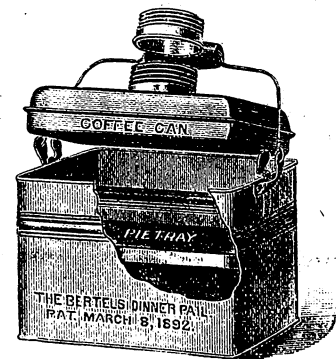
Victor vises, illustrations of some styles of which are given in the accompanying cuts. The vise shown in Fig. 1 has a

jaws and are renewable at a small cost. In Fig. 2 the same style of vise is shown, but provided with a swivel base, allow-

ing it to be turned in various positions, and is held by a cam shaped handle under the bench. The wood worker's vise, Fig. 3, has swivel back jaw and stationary bottom, but is also made with swivel bottom, the same as the vise shown in Fig. 2. In these vises the vise slide, which is one piece with the front jaw, is strengthened by wrought iron rods running part of the way through it. The swivel or back jaw is held in place and turns on a pin, while the strain comes against the shoulder at its back. A screw is provided for taking up the wear on the handle and preventing it from becoming too loose. The manufacturers state that the best features of Parker's vises have been adapted to the Victor line. In addition to the Victor vises referred to, they are made for extra heavy work and also for jewelers' use.

Screw Cup Dinner Pail.

The accompanying cut represents a dinner pail with a screw cup offered by W. B. Bertels, Son & Co., 186 East

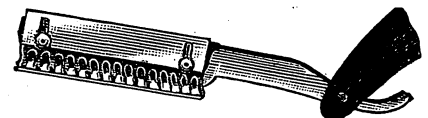


Screw Cup Dinner Pail.

Market street, Wilkes-Barre, Pa. The opening at the top of the coffee can is large enough to admit of the hand for easy cleaning, and the manufacturers claim that the coffee cannot leak or slop out when the cup is screwed on. The ears are provided with springs for holding the coffee can in place. The manufacturers state that the material and workmanship are good, that the design of the pail is attractive, and that the coffee can is large. The pails are made in three sizes: small, medium and large.

Bonanza Razor Guard.

P. D. Murphy, 75 Maine street, Lockport, N. Y., is offering a razor guard, as shown herewith. It is made of metal, nickel plated, and is designed to fit



Bonanza Razor Guard.

on any razor. It is provided with a groove which slips over the back of the razor, and to which the perforated plate is attached by nuts. The guard is set with reference to the edge of the razor, as shown in the cut, and secured in this position by turning the nuts. The manufacturer claims that by the use of the guard shaving can be done without the operator cutting or scratching himself.

The Davis Belt Fastener.

The Billings & Spencer Company, Hartford, Conn., are introducing the belt fastener illustrated in the accompanying cuts. The holder and point are

an inclined steel track, the door being held open in any desired position by a balance weight, the rope of which runs over a pulley. The rope is attached to the bracket on the door by a link, which, it is stated, fuses at 162°, dis-

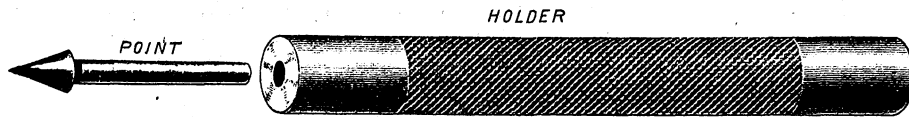


Fig. 1.—The Davis Belt Fastener.

shown in Fig. 1, which with screws and nipples, Fig. 2, complete the device. In Fig. 3 the nipple is shown in place on the point, ready to apply. The nipple follows the point through

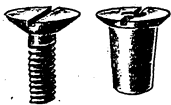


Fig. 2.—Screw and Nipple.

the belt and is secured in place by a screw, which is illustrated in Fig. 4, where a section of belting is shown with the fasteners in place. The tool described is designed for inserting the fasteners in cotton or camel's hair belting without cutting the fiber. For leather or rubber belts a regular belt,

connecting the balance weight, allowing the door by its own weight to run down the inclined track, and by the aid of stops and guides to be wedged firmly and tightly over the opening. It is claimed that the device has the following advantages over those previously made by the company: That the link is constantly in the opening whatever position the door may be in, if open at all; that one binder, back stop and rope pulley are attached to the track, thus saving two wall bolts and the expense of drilling for the same, and that the weight is better placed, being in the rear of the door, and thereby entirely out of the doorway.

The Boss Barrel Nail Puller.

The accompanying illustration represents a barrel nail puller offered by the

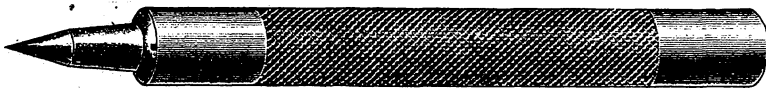


Fig. 3.—The Tool and Nipple.

punch is first used, after which the fasteners are inserted, with or without the aid of the holder and point, by driving. It is stated that the fasteners can also be applied to belts, scarfed and

Specialty Mfg. Company, Hartford, Conn., and 64 Reade street, New York. It is made with a drop forged interchangeable steel jaw, hard tempered. The jaw is driven under the nail in the

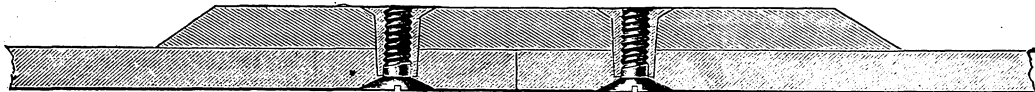
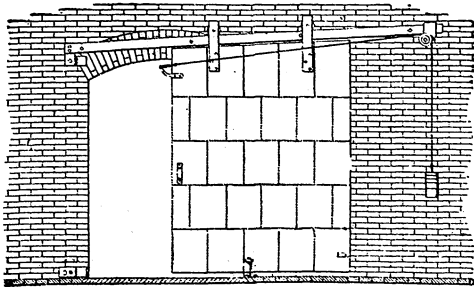


Fig. 4.—Belt with Fasteners in Place.

lapped. The fastener is made in $\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{2}$ inch sizes.

Improved Balanced Door.

The Victor Mfg. Company, Newburyport, Mass., are introducing an im-



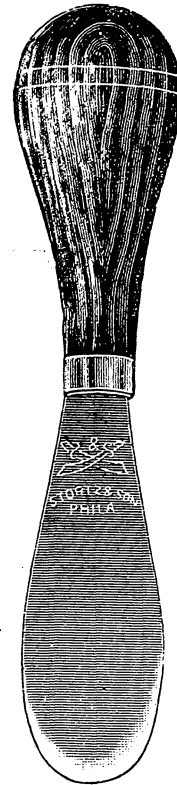
Improved Balanced Door.

proved fire door device, as shown in accompanying cut. The door is hung on roller bushed hangers running on

same manner as other nail pullers, the knob near the jaw being a fulcrum, by the aid of which the nail is drawn. By depressing the ring, with spring at the opposite end from the claw, the movable striking rod may be removed. The manufacturers claim that the puller will draw nails from barrel heads and hoops quicker than a nail puller will draw nails from boxes, and that it adapts itself to the shape and "give"

The Philadelphia Ice Chisel.

The cut herewith represents an ice chisel being introduced by John Stortz & Son, Philadelphia. The blade is $5\frac{1}{2}$ inches long and $1\frac{1}{4}$ inches wide at the broadest part. It is described as being forged from a superior quality of tool



The Philadelphia Ice Chisel.

steel, carefully tempered and finished. The handle is of hardwood, nicely polished, and the tang of the blade is riveted through it. In shape the blade is similar to that of an iceman's axe, and

is designed to crack ice in a straight direction without splintering. It is claimed that continued cutting in the same place will split the ice without splintering or chipping.

A. B. LAURENCE, manager of the New York office of the Shultz Belting Company, St. Louis, has removed to a more central location and larger quar-



The Boss Barrel Nail Puller.

of barrels. The point is made that by the use of the puller heads and hoop are saved intact, that the empty barrel is then more useful and can be sold at an increased price.

ters at 113 Liberty street, where he will carry a full line of the Shultz patent Sable Rawhide Belting and genuine Rawhide Lacing. Mr. Laurence can also furnish pure Oak Tanned Leather Belting.

Tool Bags.

The cuts herewith shown represent a line of tool baskets, bags and satchels put upon the market by the Cleveland Novelty Company, Cleveland, Ohio.

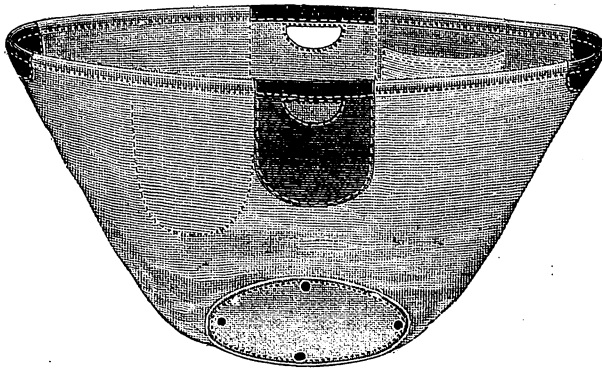


Fig. 1.—Tool Basket.

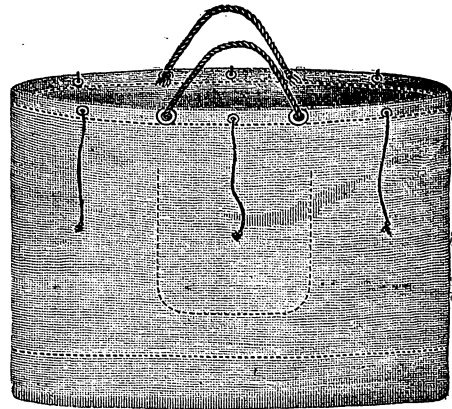


Fig. 2.—Tool Bag.

The basket, Fig. 1, is made of heavy water proof duck, leather bound, with double bottom and metal buttons, and is especially designed for mechanics whose tools are bulky and not easily carried or packed in a chest. The bag, Fig. 2, is made of the same kind of material as the basket, with double bottom and two pockets. It is adapted to the use of carpenters, masons, plasterers, who are compelled to carry their tools

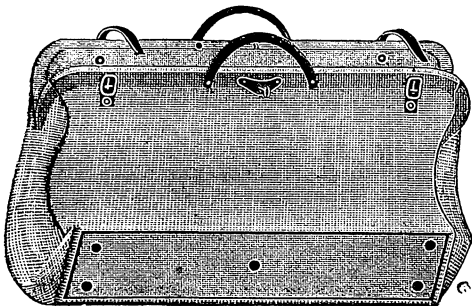


Fig. 3.—Tool Satchel.

from place to place. The satchel, Fig 3, is made of heavy canvas, with leather seams, leather handles, metal buttons to protect the bottom, and is provided with lock and key. These are referred to as being water proof and serviceable and as a great convenience to masons, plumbers and kindred tradesmen. The baskets are made in 30 and 36 inch sizes, the bags in 22, 24 and 26 inch sizes, and the satchels in 16, 18, 20, 22 and 24 inch sizes.

Devore's Bicycle Specialties.

Illustrations are presented herewith of two new bicycle specialties which have been brought out by L. M. Devore & Co. of Freeport, Ill. The bicycle stand, Fig. 1, is a simple but effective device to hold a wheel in an upright position. It consists of a standard to be screwed to the floor. At the top is hinged a vertical oscillating yoke, or loop, of such length and width as to admit to the space within it a considerable arc of the upper portion of a bicycle wheel. There is a grooved roller on the end of the loop, with a

spring attachment, so that the pressure of the roller on the tire of the wheel holds the machine securely in position. The bearing being entirely on the tire, the enameling of the wheel cannot be marred. The device can be adjusted to a safety bicycle of any height. The

saddle, Fig. 2, is so made that it permits universal adjustment. A spring distributing yielding strain extends through its total length. There is a longitudinal tilting adjustment without moving it forward or backward; also a movement forward and backward with-

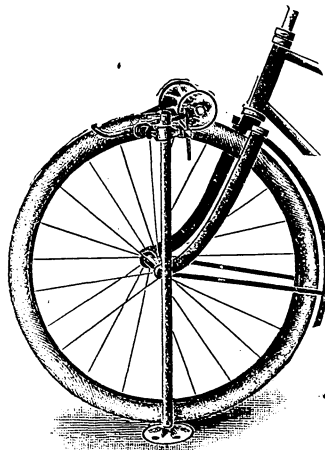


Fig. 1.—Devore's Bicycle Stand.

out preventing such adjustment. The spring offers a graduated resistance to the motion of the rider in any direction. The clamping block or clip serves not only to hold the saddle upon the rod

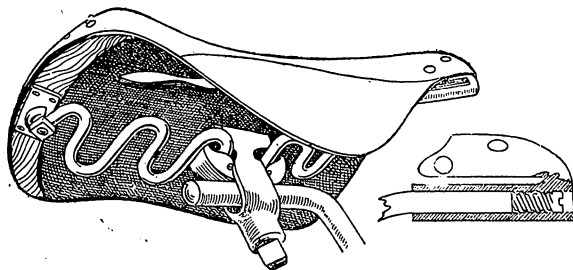


Fig. 2.—Devore's Bicycle Saddle.

but also to tilt it in any desired position. It can be adjusted for tension at the pommel with a small screw-driver. The saddle is very light, but the manufacturers claim that it will not break.

The Perfection 5-Gallon Can.

Deverall Perfection Mfg. Company, 38-38 Bridge street, Brooklyn, N. Y., are offering 5-gallon oil cans, an illustration of which is given herewith.



The Perfection 5-Gallon Can.

when sending the can to be refilled, and is made so that the spout may be swung over the top when not in use. The manufacturers claim that the can has a strongly constructed bottom and top to withstand hard usage; that the can may be perfectly sealed for transportation when filled; that the pump thoroughly vents the can, insuring a

perfect flow, and that the pump is simple and strong, provided with anti-corrosive valves. It is stated that the can is well constructed and thoroughly soldered.

Current Hardware Prices.

MAY 2, 1894.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....\$ doz \$3.00, 33¢@33¢10¢
Excelsior.....\$ doz \$10.00, 50¢@10¢
North's.....list net @ 10¢
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—

American—

Eagle Anvils, \$ 9¢.....15¢@15¢
Horse shoe brand, Wrought.....11¢@11¢
Moore & Barnes Mfg. Co.....35¢@

Imported—

Armstrong Mouse Hole.....9¢@10¢
S. & H., machine finished.....10¢@11¢
Trenton.....9¢@10¢
Wilkinson's.....10¢@11¢
Peter Wright's.....10¢@11¢

Anvil Vise and Drill—

Allen Anvil and Vise \$3.00.....40¢@10¢
Cheney Anvil and Vise.....25¢
Millers Falls Co., \$18.00.....20¢
Star.....45¢@5¢

Apple Parers—See Parers Apple, &c.

Augers and Bits—

Boring Machine Augers.....70¢@70¢10¢
Car Bits, 12-in. twist.....50¢
Common Augers and Bits.....70¢@70¢10¢
Cincinnati Bell-Angers' Bits.....30¢@10¢
Forstner Pat. Auger Bits.....15¢
Jennings' Pattern Car Bits.....40¢
Jennings' Pattern Auger Bits.....60¢
O. E. Jennings & Co., No. 10, extension lip.....40¢
O. E. Jennings & Co., No. 30.....40¢
O. E. Jennings & Co., Auger Bits, set 32½ quarters, No. 5, \$5; No. 30, \$3.50, 25¢
Russell Jennings' Augers and Bits 25¢@10¢
Lewis' Patent Single twist.....45¢
L'Hommedieu Car Bits.....15¢@10¢
Fugh's Black.....20¢
Fugh's Jennings Pattern.....20¢
Snell's Bits.....60¢@60¢10¢

Bit Stock Drills—

Cleveland.....50¢@10¢5¢
Cincinnati, for wood.....30¢@10¢
Cincinnati, for metal.....45¢@10¢
Morse Twist Drills.....50¢@10¢5¢
Now Process Twist Drill Co.....50¢@10¢5¢
Standard.....50¢@10¢5¢
Syracuse, for metal.....50¢@10¢5¢
Syracuse, for wood (wood list) 30¢@30¢5¢

Expansive Bits—

Clark's small, \$18; large, \$28. 35¢@35¢10¢
Ives' No. 4, \$ doz. \$80.....40¢
Steer's, No. 1, \$28; No. 2, \$18.....35¢@40¢
Stearns' No. 2, \$48.....20¢
Swan's.....40¢

Gimlet Bits—

Bee.....25¢@25¢10¢
Common.....\$ gross \$2.50, \$3.00
Diamond.....\$ doz \$1.25, 40¢@10¢
Double Cut:
Hartwell's.....\$ gro., \$10.00, 40¢@10¢
Douglass'.....40¢@10¢50¢
Ives.....60¢@10¢60¢10¢5¢
Shepardson's.....45¢@10¢45¢10¢5¢

Hollow Augers—

Bonney's Adjustable, \$ doz \$48.....50¢
Cincinnati Adjustable.....25¢@10¢
Cincinnati Standard.....25¢@10¢
Douglass.....33¢@33¢10¢
French, Swift & Co. (Beecher).....33¢@33¢10¢
Ives'.....33¢@33¢10¢
Ives' Expansive, each \$4.50.....50¢5¢
Stearns'.....30¢@10¢
Universal Expansive, each \$4.50.....20¢
Wood's.....25¢@25¢10¢

Ship Augers and Bits—

L'Hommedieu's.....15¢@10¢15¢10¢5¢
Snell's.....25¢@25¢10¢
Snell's Ship Auger Pattern Car Bits.....15¢@10¢15¢10¢5¢
Watrous'.....25¢@25¢10¢

Awl Hasps—See Hasps, Awl.

Awls—

Brad, Handled.....\$ gr. \$2.50@3.00
Brad, Shouldered.....\$ gr. \$1.30@1.40
Peg, Pat.....\$ gr. 35¢@38¢
Peg, Should.....\$ gr. \$1.50@1.55
Scratch, Handled.....\$ gr. \$4.00@4.50
Scratch, Socket.....\$ doz. \$1.10@1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands...\$6.00@8.50
First quality, other brands...5.50@6.00
Beveled add 50¢ @ doz.

Axle Grease—See Grease, Axle.

Axles—

No. 1.....3¼¢@4¢; 4¼¢@5¢
No. 7 to 12.....70¢
No. 15 to 28.....47¢@
No. 19 to 22.....70¢
Concord Axles, loose collar.....4¼¢@5¢
Concord Axles, solid collar.....4¢@5¢

Bag Holders—See Holders, Bag.

Balances—

Sash—
Caldwell, low list.....30¢
Pullman.....60¢

Spring—

Spring Balances.....40¢@40¢10¢
No. 2000 20 80
Chatillon, \$ doz.....\$0.80 0.95 1.75 net
Chatillon Straight Balances.....40¢@40¢10¢
Chatillon Circular Balances.....50¢@10¢

Barb Wire—See Wire, Barb.

Bars—

Crow—
Cast Steel.....\$ 2¼¢@3¢
Iron, Steel Points.....\$ 2¼¢@2½¢

Basins, Wash—

Standard Fiberglass, No. 1, 10½-in., \$1.80;
12-inch, \$2.00; 13½-inch, \$2.50; 16-inch, \$3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82, 60¢@10¢
60¢@10¢5¢
Chatillon's No. 1.....40¢
Chatillon's No. 2.....50¢@10¢50¢10¢5¢
Custer's.....35¢@

Beaters—

Egg—
Bryant's.....\$ gross \$14.00
Double (H. & R. Mfg. Co.), \$ gro., No. 0 \$12.00; No. 1, \$15.00; No. 2, \$18.00
Dover.....\$ doz \$1.00@1.20
Dover (Standard Co.).....\$ doz \$1.00
Duplex (Standard Co.).....\$ doz \$1.00
Duplex Extra Heavy (Standard Co.).....\$ doz \$3.50
Easy (H. & R. Mfg. Co.).....\$ gro \$12.00
Improved Acme (H. & R. Mfg. Co.).....\$ gro \$9.00
Silver & Co.....\$ doz \$5.50
Spiral.....\$ gro \$4.25 @ \$4.50
Triple (H. & R. Mfg. Co.).....\$ gro \$16.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, \$1;
No. 2, \$2.....20¢

Bells—

Cow—
Common Wrought.....60¢@10¢
Kentucky Durham.....70¢@10¢
Kentucky, Sargent's list.....70¢@10¢
Kentucky, "Star".....20¢@10¢
Texas Star.....50¢@10¢50¢10¢5¢
Western, Sargent's list.....70¢@10¢

Door—

Crank, Brooks'.....50¢@10¢2¢
Crank, Cone's.....10¢
Crank, Connel's.....20¢@10¢
Gong, Abbe's.....35¢@10¢
Gong, Barton's.....40¢@10¢50¢
Gong, Yankee.....45¢@10¢
Lever, R. & E. Mfg. Co.'s.....50¢@10¢2¢
Lever, Sargent's.....60¢@10¢
Lever, Taylor's Bronzed or Plated.....net
Lever, Taylor's Japanned.....25¢@10¢
Pull, Brooks'.....50¢@10¢2¢

Electric—

Bigelow & Dowse.....20¢@20¢10¢
Wollensak's.....20¢@20¢10¢

Hand—

Extra Heavy Brass.....70¢
Light Brass.....70¢@10¢70¢10¢
Silver Chime.....35¢@10¢
White.....70¢
Globe Cone's Patent.....25¢@10¢35¢

Miscellaneous—

Call.....45¢@50¢
Farm Bells.....\$ 25¢@25¢
Steel Alloy Church and School Bells.....40¢

Bellows—

Blacksmiths'.....60¢@10¢10¢70¢
Hand Bellows.....40¢@10¢50¢
Molders'.....40¢@10¢50¢

Belting, Rubber—

Common Standard.....75¢@10¢75¢10¢5¢
Extra.....60¢@10¢5¢75¢
Standard.....70¢@10¢75¢
N.Y.B. & P. Co., Carbon.....60¢@10¢5¢
N.Y.B. & P. Co., Double Diamond.....6¢
N.Y.B. & P. Co., 1846 Para.....40¢@10¢

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender 15¢@15¢10¢
Green River Tire Benders and Upsetters.....20¢
Stoddard's Lightning Tire Upsetters.....15¢

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Cleveland Block Co., Mal. Iron.....50¢@10¢
Moore's Novelty, Mal. Iron.....50¢@10¢
Sure Grip Steel Tackle Block.....25¢@25¢10¢
See also Machines, Hot.

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....80¢@10¢80¢10¢5¢
Genuine Eagle, Norway, list Oct. '84.....80¢@10¢80¢10¢
Eagle, Norway, list Oct. '84.....80¢@10¢80¢10¢
Phila. pattern, list Oct. '74.....80¢
R.B. & W., old list.....70¢
Bolt Ends, list Jan. 1, 1890, 80¢@10¢80¢20¢
Machine, list Jan. 1, 1890.....80¢@10¢80¢20¢

Door and Shutter—

Cast Iron Barrel Square, \$ 5¢@10¢75¢10¢5¢
Cast Iron Chain (Sargent's list).....65¢@10¢65¢10¢5¢
Cast Iron Shutter Bolts, 75¢@10¢5¢10¢5¢
Ives' Patent Door Bolts, 80¢@10¢40¢10¢10¢
Wrought Barrel.....75¢@10¢80¢
Wrt B. K. Flush Common.....60¢@10¢60¢10¢10¢

Wrt Shutter, Brass Knob.....60¢@10¢60¢
Wrt Shutter, Sargent's list.....40¢@10¢
Wrt Shutter, all iron, Stanley's, 60¢@70¢
Wrought Square.....75¢@10¢80¢
Wrt Sunk Flush, Sargent's list.....60¢@10¢
Wrt Sunk Flush, Stanley's list.....60¢@10¢

Stove and Plow—

Plow.....60¢@10¢60¢10¢10¢
Stove.....65¢@70¢
R. B. & W., Plow.....55¢

Tire—

Common, list Feb. 28, '83.....70¢@70¢10¢
American Sore Company.....70¢
Norway, Phila., list Oct. 16, '84.....75¢
Eagle, Phila., list Oct. 16, '84.....80¢
Bay State, list Feb. 28, '83.....70¢
Port Chester Bolt and Nut Company.....70¢
Empire list Feb. 28, '83.....70¢
Keystone, Philadel., list Oct. '84.....75¢
Norway, Phila., list Oct. '84.....75¢
R. B. & W., Philadel., list Oct. 16, '84.....80¢

Borers, Tap—

Common and Ring.....20¢@10¢
Clark's.....33¢@35¢
Enterprise Mfg. Co.....35¢@35¢
Ives' Tap Borers.....35¢@35¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Letter—

Tatum's.....40¢

Boxes, Wagon—

Per m.....25¢

Boxes, Miter.

Spiker's Excelsior, 3 in. \$7.50, 4 in. \$8.50, 5 in. \$13.00, 6 in. \$15.00.....20¢

Braces—

American Bit Brace and Tool Co.....60¢@10¢
Nos. 10, 22, 30.....70¢@10¢
Nos. 22, 28, 37.....60¢@10¢5¢
Nos. 13, 26, 36, 37.....70¢@10¢5¢
Amidon's.....75¢@10¢80¢
Barker's Imp'd Plain.....65¢@10¢70¢
Barker's Imp. Nickeled.....75¢@10¢80¢
Ratchet.....60¢
Globe Jawed.....40¢@40¢10¢
Corner Brace.....40¢@40¢10¢
Universal, 8 in., \$2.10; 10 in., \$2.25
Buffalo Ball.....\$1.10@1.15
Barber's.....50¢@10¢
Bartholomew's.....50¢@10¢60¢5¢
Nos. 11, 17, 118, 119.....70¢@70¢5¢
Common Ball, American.....\$1.00@1.10
Davis Patent.....50¢@10¢
Fray's Genuine Spotted's.....60¢@50¢10¢
Fray's Nos. 70 to 120, 81 to 123, 207 to 414.....60¢@50¢10¢

Ives' New Haven Novelty.....70¢@70¢5¢

New Haven Ratchet.....60¢@50¢10¢

Barber Ratchet.....60¢@50¢10¢

Barber's.....60¢@50¢10¢

Spotted.....60¢@50¢10¢

P. S. & W. Co., Peck's Patent.....60¢

Rose & Johnson.....50¢

Ston's.....75¢@10¢80¢

Barker's Imp. Polished.....65¢@10¢70¢

Ratchet, Polished.....50¢@10¢60¢

Ratchet, Nickeled.....40¢@10¢80¢

Buffalo Ball.....net, \$1.10@1.15

Brackets—

Shelf, fancy.....70¢@70¢10¢
Other makes at a wide range of prices.

Shelf, plain.....65¢@70¢

Sargent's list.....60¢@10¢70¢10¢

Bradley Shelf Brackets.....70¢@10¢

Bright Wire Goods—See Wire.

Broilers—

Hens' Self, 1 inch.....9 10 9x11
Basting, 1 Per doz.....\$4.50 5.50 6.50
Morgan Odless.....\$ doz. \$12, 80¢
Queen City.....50¢
Queen City.....35¢@
Wire Goods Co.....65¢@10¢

Buckets, Well and Fire—

See Pails, Galvanized.

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers, Butcher's.

Butts—

Brass—

Cast Brass, Fast.....33¢@10¢
Cast Brass, Loose Joint.....33¢@10¢
Cast Brass, Tiebout's.....50¢
Wrought Brass.....80¢@10¢80¢20¢

Cast Iron

Fast Joint, Broad.....60¢@60¢5¢
Fast Joint, Narrow.....60¢@60¢5¢

Loose Joint.....

Loose Joint, Japanned.....75¢@10¢
Loose Joint, Jap. with Acorns.....80¢
Loose Pin, Acorns, Japanned.....
Loose Pin, Acorns, Japanned.....
Plated Tips.....
Mayer's Hinges.....
Parliament Butts.....

Wrought Steel—

Fast Joint, Broad.....
Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Inside Blind, Light.....
Inside Blind, Regular.....
Loose Joint, Broad.....
Loose Pin.....
Table Butts, Back Flaps, &c.....
Bronzed Wrought Butts 50¢@10¢50¢10¢10¢

Cages, Bird—

Hendryx, Brass.....10¢@50¢
Hendryx, Enameled.....40¢@10¢50¢

Callipers—See Compasses.

Calks Toe—

Burke's, One Prong, Blunt.....4¼¢@5¢
Burke's, One Prong, Sharp.....5¼¢@6¢
Burke's, Two Prong, Blunt.....5¼¢@6¢
Burke's, Two Prong, Sharp.....6¼¢@7¢
Gautier, One Prong, Blunt.....5¼¢@6¢

Can Openers—See Openers, Can.

Cans Milk—

S. S. & Co.: 5-gal., \$3.00; 8-gal., \$4.40;
10-gal., \$4.75 each.....40¢@10¢

Cans Oil—

Galvanized Blue Band, 1 gal., \$ doz. \$2.35
Galvanized Blue Band, 5 gal., Tip-Top.....\$ doz. \$12.00
Galvanized Blue Band, 5 gal., Faucet.....\$ doz. \$8.00
Glass Oil, Friend.....\$ doz. \$2.75

Caps—

Percussion—

Hicks & Goldmark's and Union Metallic Cartridge Co.....\$ 1000
Eley's E. B.....56¢@58¢
Eley's D Waterproof, Central Fire \$1.00
E. B. Grand Edge, Cent. Fire, 1-10's.....47¢@50¢
E. B. Trimmed Edge, 1-10's.....47¢@50¢
F. L. Waterproof, 1-10's.....45¢@47¢
G. D.....45¢@47¢
Musket, Waterproof, 1-10's.....50¢@53¢
S. B. Genuine Imported.....45¢

Primers—

Berdan Primers, \$1.00.....25¢
B. L. Caps (Sturtevant Shells) \$1.00.....25¢
All other Primers, \$1.20.....25¢

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.....25¢

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—

B. B. Caps, Ball, Swgd., \$1.85@1.90
B. B. Caps, Round Ball, \$1.60@1.65
Blank Cartridges, except 22 and 32 cal., additional 10¢ to above discounts.
Blank Cartridges, 22 cal. \$1.75.....25¢
Blank Cartridges, 32 cal. \$3.50.....25¢
Cent. Fire, Military and Sporting.....15¢@5¢

Cent. Fire, Pistol and Rifle.....25¢@25¢

Primed Shells and Bullets.....15¢@5¢

Rim Fire Cartridges.....60¢@5¢

Rim Fire Military.....15¢@5¢

Carpet Sweepers—

See Sweepers, Carpet.

Casters—

Bed.....\$55@55¢10¢
Plate.....\$60@60¢10¢
Shallow Socket.....40¢@10¢
Deep Socket.....35¢
Glant Truck Casters.....45¢
Gwinner's Common Sense.....45¢
Gwinner's Hercules.....45¢
Martin's Patent

Checks, Door—

Unity	50%
Chisels—	
Socket Framing and Firmer	
Mix.	
Ohio Tool Co.	75¢10¢80%
P. S. & W.	
Witherby	
Buck Bros.	30%
Charles Buck	30%
Douglas	75¢75¢10%
Merrill	80¢10¢60¢10¢5%
L. & J. White	30¢30¢25%

Tanged and Miscellaneous.	
Buck Bros.	30%
Charles Buck	30%
Butchers	\$4.75¢50.00 to 2
Bear & Jacksons	\$5 to 2
Tanged Filmers	50¢50¢10%
Cold Chisels, fair quality, # 1	14¢16%

Chucks—	
Beach Pat.	each, \$8.00, 20%
Danbury	each, \$9.00, 30¢30%
Graham Patent	33¢45%
Morse's Adjustable, each, \$7.00, 20¢20%	
Syracuse, Bait Pat.	25%
Skinner Patent Chucks.	
Combination Lathe Chucks.	40%
Drill Chucks	25%
Independent Lathe Chucks.	40%
Planer Chucks	20%
Universal Lathe Chucks.	40%
Union Mfg. Co.	
Combination.	40%
Independent.	40%
Universal.	40%
Victor.	\$8.50, 25%

Churns—	
McDermid Star Barrel Churn, each	
6 gal., \$2.00; 10 gal., \$2.75; 15 gal.,	
\$3.00; 20 gal., \$3.25.	
Tiffin Union, each, 5 gal. \$3.25; 7 gal.,	
\$3.75; 10 gal., \$4.25.	

Clamps—	
Adjustable, Cincinnati.	15¢10%
Adjustable, Hammers.	15¢15¢5%
Adjustable, Stearns.	30¢30¢10%
Barnes' Machinists' Clamps.	33¢45%
Cabinet, Sargent's.	70¢10%
Carpenter's, Cincinnati.	25¢10%
Carriage Makers', P. S. & W. Co.	40¢10%
Eberhard Mfg. Co.	40¢40¢10%
Joiners' Clamps, Tatum's.	25¢10%
R. I. Tool Co.'s Wrought Iron.	25%
Saw Clamps, see Vises, Saw Filers'	
Stearns' Malleable, with Wrought Iron	
Screw.	75¢75¢25%
Warner's.	40¢10¢40¢10%

Cleavers, Butchers'—	
Beatty's.	40¢40¢5%
Bradley's.	25¢30%
Foster Bros.	30%
New Haven Edge Tool Co.'s.	30%
Nichols Bros.	30%
P. S. & W.	35¢45¢35¢10%
Schultz, Lohoff & Co.	40¢40¢5%
L. & J. White.	20¢25%

Clips—	
Baker Axle Clips.	25%
Norway, Axle, 1/2 & 5-16.	55¢25%
Norway Spring Bar Clips, 5-16.	60¢25%
2d grade Norway Axle 1/2 & 5-16.	65¢5%
Steel Felloe Clips.	70%
Superior Axle Clips.	70%
Wrought Iron Felloe Clips.	70%

Cloth and Netting, Wire	
See Wire, etc.	

Cockeyes—	
Hardware, (Globe) Kerosene, Lever	
Bibbs, Racking, etc.	60¢2¢60¢10

Coffee Mills—See Mills, Coffee.	
Collars, Dog—	
Brass, Pope & Stevens' list.	40%
Chapman Mfg. Company, new list.	40%
Embossed, Gilt, Pope & Stevens' list	30¢10%
Leather, Pope & Stevens' list.	40%
Medford Fancy Goods Co.	40¢10¢50%

Combs, Curry—	
American Curry Comb Co.	33¢45%
Fitts'	60¢10¢50¢10¢10%
Gibbs' Magnetic.	40%
Kohler's Humane.	40%
Kohler's Magic Oscillating.	40%
Rubber, per doz., \$10.00.	25%

Compasses, Dividers & C.	
Compass, Calipers, Dividers.	70¢10¢75%
Bemis & Call Co.'s	
Dividers.	
Calipers, Call's Patent Inside.	65%
Calipers, Double.	65%
Calipers, Inside or Outside.	65%
Calipers, Wing.	60%
Compasses.	50¢25%
Excelsior.	50%
Starrett's	
Combination Dividers.	25%
Lock Calipers and Dividers.	25%
Spring Calipers and Dividers.	25¢10%
Stevens & Co.'s.	25¢10%

Coolers, Water—	
1-gal., \$2.00; 2-gal., \$2.50; 3-gal.,	
\$3.00; 4-gal., \$3.40 each.	33¢45%

Coopers' Tools—	
See Tools, Coopers.	

Cord—Sash—	
Braided, Crown, Drab and Fancy, #	
10, 55¢.	
Braided, Crown White, # 10, 50¢.	
Cable Laid Italian Sash.	19¢20%
Common.	8¢9¢9%
Common Russia Sash.	12¢13%
Common India Hemp, Braided.	28%
India Cable Laid Sash.	11¢12%
Massachusetts, White.	22¢24%
Ossawaun Mills—	
Braided, Giant, Drab and Fancy, #	
35¢.	
Braided, Giant, White, # 30¢.	
Patent, good quality.	10¢11%
Patent Russia Sash.	13¢14%
Samson—	
Braided, Drab Cotton.	42¢
Braided, Italian Hemp.	40¢
Braided, Linen.	60¢
Braided, White Cotton.	37¢
Semper Idem, Braided, White.	26%
Silver Lake—	
A quality, Drab, 55¢.	25%
A quality, White, 50¢.	25%
B quality, Drab, 35¢.	10%
B quality, White, 30¢.	10%
Sylvan Spring, Extra Braided, Drab.	39%
Sylvan Spring, Extra Braided, White.	34%
Tate's Solid Braided—	
Economy, Drab.	27%
Economy, White.	22%

Hercules, Drab.	# 10, 50%
Hercules, White.	# 10, 25%
White Cotton Braided, fair.	# 10, 25¢25%
Wire Picture—	
Braided or Twisted.	80¢50¢80¢15%

Corkscrews—See Screws, Cork.	
Corn Knives and Cutters—	
See Knives, Corn.	

Crackers, Nut—	
Acme.	
Japanned, # gro., \$30.	50%
Nickel Plated, # gro., \$30.	10%
Table (H. & B. Mfg. Co.)	40%
Turner & Seymour Mfg. Co.	50%

Cradles—	
Grain.	50¢2¢50¢5¢2%

Crayons—	
White Crayons, # gross.	7¢8%
D. M. Steward Mfg. Co.	
Metal Workers' # gross.	\$2.50, 25%
Railroad, # gross.	2.00, 25%
Rolling Mill, # gross.	2.50, 25%
Soapstone Pencils, # gross.	1.50, 25%
See also Chalk.	

Creamery Pails—See Pails, Creamery.	
Crow Bars—See Bars, Crow.	
Curry Combs—	
See Combs, Curry.	

Cutters—	
American.	80%
Nos. 1 2 3	
Enterprise.	\$5 \$7 \$10 \$25 \$50 \$80
Nos.	10 12 22 32 42
Each.	\$3 \$2.50 \$4 \$6 \$15
Dixon's, # doz.	40¢40¢5%
Nos.	1 2 3
Draw Cut, each.	\$14.00 \$17.00 \$19.00 \$30.00
Nos. 5 6 8	
Hale's, # doz.	\$50 \$75 \$80 \$225, 20¢25%
Nos.	11 12 13
Home No. 1, # doz.	\$27.00 \$38.00 \$45.00
Little Giant, # doz.	\$28.00, 55¢10%
Nos. 305 310 315 320 322	
\$35.00 \$48.00 \$44.00 \$72.00 \$88.00	
Miles' Challenge, # doz.	45¢45¢10%
Nos.	1 2 3
Triumph No. 505, # doz.	\$22.00 \$30.00 \$40.00
Wodruft's, # doz.	\$21.00, 25¢30%
Nos.	100 150
Chadborn's Smoked Beef Cutter, # doz.	\$15.00 \$18.00
Enterprise Beef Shavers.	\$66.00

Meat—	
Nos. 1 2 3	
Enterprise.	\$5 \$7 \$10 \$25 \$50 \$80
Nos.	10 12 22 32 42
Each.	\$3 \$2.50 \$4 \$6 \$15
Dixon's, # doz.	40¢40¢5%
Nos.	1 2 3
Draw Cut, each.	\$14.00 \$17.00 \$19.00 \$30.00
Nos. 5 6 8	
Hale's, # doz.	\$50 \$75 \$80 \$225, 20¢25%
Nos.	11 12 13
Home No. 1, # doz.	\$27.00 \$38.00 \$45.00
Little Giant, # doz.	\$28.00, 55¢10%
Nos. 305 310 315 320 322	
\$35.00 \$48.00 \$44.00 \$72.00 \$88.00	
Miles' Challenge, # doz.	45¢45¢10%
Nos.	1 2 3
Triumph No. 505, # doz.	\$22.00 \$30.00 \$40.00
Wodruft's, # doz.	\$21.00, 25¢30%
Nos.	100 150
Chadborn's Smoked Beef Cutter, # doz.	\$15.00 \$18.00
Enterprise Beef Shavers.	\$66.00

Slaw and Kraut—	
Tucker & Dorsey Mfg. Co.	
Baul Cutters.	40%
Slaw Cutters, 1 Knife, # gross.	\$21.00
Slaw Cutters, 2 Knife, # gross.	\$30.00

Tobacco	
Acme.	# doz., \$20.00, 40%
All Iron.	# doz., \$4.25
Champion.	20¢10¢30%
Nashua Lock Co.'s, # doz.	\$18.00, 50¢55%
National.	# doz., \$21.00, 30%
Sargent's.	# doz., \$24.00, 55¢10

Washer	
Appleton's, # doz.	\$16.00, 60¢10%
Bonney's, # doz.	30¢10%
Cincinnati.	25¢10%
Johnson's.	# doz., \$11.00, 33¢45%
Penny's, # doz., Pol. \$14 Jap'd, \$16, 55%	
Smith's Pat.	# doz., \$12.00, 20¢10¢10%

Diggers, Post Hole, etc.—	
Cronk's Post Bars, # doz.	\$80.00,
50¢50¢50¢10%	
Eureka Diggers, # doz.	\$11.00¢\$12.50
Fletcher Post Hole Augers, # doz.	\$36.00,
20¢20¢10%	
Gem, Improved # doz., \$9.00¢\$10.00 net	
Gibbs' Columbia.	# doz., \$12.00
Gibbs' Hustler.	# doz., \$10.00
Gibbs' Imperial.	# doz., \$7.50
Gibbs' National.	# doz., \$12.00
Gibbs' Post Hole Digger.	# doz., \$12.75
Kohler's Hercules.	# doz., \$14.00
Kohler's Invincible.	# doz., \$12.00
Kohler's Little Giant.	# doz., \$18.00
Kohler's New Champion.	# doz., \$8.00
Ryan's, # doz.	\$30.00, 10%
Samson, # doz.	\$34.00, 25¢25¢10%
Schneider.	# doz., \$18.00
Shimer's Hollow Handle.	# doz., \$24.00,
50%	
Vaughan's Post Hole Auger, # doz.	\$8.50¢\$9.50

Dividers—See Compasses.	
Dog Collars—See Collars, Dog.	

Door Checks—	
See Checks, Door.	

Door Springs—	
See Springs, Door.	

Drawers, Money—	
Money Drawers, # doz.	\$18¢\$20
Wadde's Improved, No. 1, # doz.	\$15.00
Wadde's Improved No. 2, # doz.	\$13.00
Wadde's Comb. Cutlery Case and	
Alarm Tilt.	\$12 50

Drawing Knives—	
See Knives, Drawing.	

Drills and Drill Stocks—	
Automatic Boring Tools.	\$1.75¢\$1.85
Bench Drills, Stearns.	50%
Blacksmith's, # each.	\$1.75
Blacksmith's, # each.	\$7.50, 20%
Breast, Bartholomew's.	each \$2.50
25¢10¢40%	
Breast, Millers Falls.	each \$3.00, 25%
Breast, P. S. & W.	40¢10%
Breast, Wilson's.	30¢5%
Chicopee Automatic Drill.	20¢10%
Goodell Automatic Drill.	40¢50¢10%
Ratchet, Curtis & Curtis.	25%
Ratchet, Ingersoll's.	20¢20%
Ratchet, Merrill's.	20¢20%
Ratchet, Moore's Triple Action.	25¢30%
Ratchet, Parker's.	20¢20%
Ratchet, Weston's.	20¢25%
Ratchet, Whitcomb's.	20¢10%
Whitcomb's Hand Drill, Plain.	\$11.00,
Adjustable.	\$12.00, 20¢10%

Twist Drills—	
Cleveland.	50¢10¢10%
Diamond, W. & B.	50¢10¢10%
Graham's Pat. Groove Shank.	50¢10¢10%
Graham's.	50¢10¢10%
New Process.	50¢10¢10%
Standard.	50¢10¢10%
Syracuse (Metal List).	50¢10%

Drill Bits or Bit Stock

Drills—See Augers and Bits.

Drill Chucks—See Chucks.

Dripping Pans—

See Pans, Dripping.

Drivers, Screw—

Allard's Spiral, new list.

Brace Screw Drivers.

Buck Bros.

Buck Bros' Screw Driver Bits.

Clark's Pat.

Cincinnati.

Champion.

Disston.

Eilrich's Socket and Ratchet.

Fray's Hol. H. dle Sets.

Gay & Parsons.

Goodell's Automatic.

Knapp & Cowles.

No. 1.

No. 2.

Nos. 4 and 60.

Screw Driver Bits, Parr's.

Screw Driver Bits.

Stanley R. & L. Co.'s.

No. 6.

Stearns.

Syracuse Screw Driver Bits.

C. T. Williamson Wire Novelty Co.

Egg Beaters—See Beaters, Egg.

Egg Poachers—

See Poachers, Egg.

Electric Bell Sets—

See Bells, Electric.

Emery—No. 4 to No. 54 to Flour, CF

40 gr. 150 gr. F.F.F.

Kegs, # 10.

1/2 kegs, # 10.

1/4 kegs, # 10.

10-cans, 10

10-cans, less

than 10.

Enameled and Tinned

Ware—See Ware, Hollow.

Escutcheon Pins—

See Pins, Escutcheon.

Escutcheons—

Brass Thread.

Door Lock.

Wood.

Expanded Metal—

List No. 6.

Door Mats, Galvanized.

Fencing, Painted Sheets.

Lathing.

Netting, Painted Sheets.

Tree Guards, Painted.

Window Guards, Painted.

Extractors, Lemon Juice—

See Squeezers, Lemon.

Fasteners, Blind—

Austin & Eddy No. 2008.

MacKrell's, # doz., \$1.00.

Security, # doz., \$1.00.

Van Seld's Old Pat.

Zamman's Screw Pat.

Faucets—

B. & L. B. Co.

West's Lock, Open and Shut Key.

Burnside's Red Cedar.

Burnside's Red Cedar, bbl. lots.

Cork Lined.

Fenn's.

Fenn's Cork Stops.

Halters—
Covert's Adj. Rope Halters.....40&25
Covert's Adj. Web Halters.....50&25
Covert's Hemp Horse and Cattle Ties.....50&10&25
Covert's Jute Cattle Ties.....70&10&25
Covert's Jute Horse Ties.....70&25
Covert's Rope, 7-16-in. Jute.....70&25
Covert's Rope, 1-in. Hemp.....50&25
Covert's Rope, Jute.....50&10&25
Covert's Saddlery Works Halters.....33&45
Covert's Saddlery Works Hand Web Halters.....33&45
Covert's Saddlery Works Horse and Cattle Ties.....33&45

Hammers—
Handled Hammers—
Atha Tool Co.....50&10
Buffalo Hammer.....50&10
Humason & Beckley.....50&10
Verree.....40&10
Cheney's Claw.....40&10
Cheney's Machinist's & Riveting.....50&25
O. Hammond & Son.....40&10
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Heavy Hammers and Sledges—
8 lb and under.....\$4.00
8 to 10 lb.....\$5.00
10 to 15 lb.....\$6.00
15 to 20 lb.....\$7.00
20 to 25 lb.....\$8.00
25 to 30 lb.....\$9.00
30 to 35 lb.....\$10.00
35 to 40 lb.....\$11.00
40 to 45 lb.....\$12.00
45 to 50 lb.....\$13.00
50 to 55 lb.....\$14.00
55 to 60 lb.....\$15.00
60 to 65 lb.....\$16.00
65 to 70 lb.....\$17.00
70 to 75 lb.....\$18.00
75 to 80 lb.....\$19.00
80 to 85 lb.....\$20.00
85 to 90 lb.....\$21.00
90 to 95 lb.....\$22.00
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680 to 685 lb.....\$140.00
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715 to 720 lb.....\$147.00
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735 to 740 lb.....\$151.00
740 to 745 lb.....\$152.00
745 to 750 lb.....\$153.00
750 to 755 lb.....\$154.00
755 to 760 lb.....\$155.00
760 to 765 lb.....\$156.00
765 to 770 lb.....\$157.00
770 to 775 lb.....\$158.00
775 to 780 lb.....\$159.00
780 to 785 lb.....\$160.00
785 to 790 lb.....\$161.00
790 to 795 lb.....\$162.00
795 to 800 lb.....\$163.00
800 to 805 lb.....\$164.00
805 to 810 lb.....\$165.00
810 to 815 lb.....\$166.00
815 to 820 lb.....\$167.00
820 to 825 lb.....\$168.00
825 to 830 lb.....\$169.00
830 to 835 lb.....\$170.00
835 to 840 lb.....\$171.00
840 to 845 lb.....\$172.00
845 to 850 lb.....\$173.00
850 to 855 lb.....\$174.00
855 to 860 lb.....\$175.00
860 to 865 lb.....\$176.00
865 to 870 lb.....\$177.00
870 to 875 lb.....\$178.00
875 to 880 lb.....\$179.00
880 to 885 lb.....\$180.00
885 to 890 lb.....\$181.00
890 to 895 lb.....\$182.00
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960 to 965 lb.....\$196.00
965 to 970 lb.....\$197.00
970 to 975 lb.....\$198.00
975 to 980 lb.....\$199.00
980 to 985 lb.....\$200.00
985 to 990 lb.....\$201.00
990 to 995 lb.....\$202.00
995 to 1000 lb.....\$203.00

Handcuffs and Leg Irons—
See Police Goods.

Handles—
Cross-Cut Saw Handles—
Akins, new list.....40
Champion.....15
Ely's Perfection.....\$3.00
Sensible.....40

Iron, Wrought or Cast—
Barn Door, \$ doz \$1.40.....10&10
Bronze Iron Drop Latches.....\$ doz 70¢ net
Chest and Lifting.....70¢ doz 70¢ net
Door or Thumb.....0
Nos.....1 2 3 4
Per doz.....\$0.90 1.00 1.08 1.35 1.50
Jap'd Store Door Handles—Nuts, \$1.62
Plate, \$1.10; no plate, \$0.88.....net
Roggin's Latches.....\$ doz 30¢ 35¢

Wood—
Anger, assorted.....\$ gr 5.00
Anger, large.....\$ gr 7.00
File, assorted.....\$ gr 2.75
Brad A.W.I.....\$ gr 2.00
Apple Firmer Chisel, ass'd.....\$ gr 5.00
Apple Firmer Chisel, large.....\$ gr 6.00
Hickory Firmer Chisel, ass'd.....\$ gr 4.50
Hickory Firmer Chisel, large.....\$ gr 5.00
Socket Firmer Chisel, ass'd.....\$ gr 5.00
Socket Framing Chisel, ass'd.....\$ gr 5.00
Chisel, Fibre Head.....33&45
Hammer, Hatchet, Axe, &c.....40&40&25
Hoe, Rake, Shovel, &c.....60&60&25
Pat. Auger, Douglass.....\$ set \$1.25
Pat. Auger, Ives.....30&10
Pat. Auger, Swan's.....\$ set \$1.00
Saw and Plane.....40&10&50
J. B. Smith & Co.'s Pat. File.....50¢

Hangers—
Barn Door, New England.....70¢ doz 70¢ 5¢
Barn Door, old patterns.....70¢ doz 70¢ 5¢
Barry.....50¢
Best Anti-Friction.....60¢ doz 60¢ 10¢ 5¢
Boss.....60¢ doz 60¢ 10¢ 5¢
Carrier Steel Anti-Friction.....40¢ doz 40¢ 10¢
Champion.....60¢ doz 60¢ 10¢
Chicago Anti-Friction.....30¢ doz 30¢ 10¢
Chimax Anti-Friction.....55¢
Cincinnati Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488,

Plate.....33½¢
 Romer's Night Latches.....15¢
 R. & E. Mfg. Co., list Mar. 30, 1893.....50¢
 Sargent & Co., list Aug. 1, 1893.....50¢
 Warner's Burglar Proof.....\$3.00, 50¢
 Yale.....net prices

Elevator—

Moore's.....33½¢

Padlocks—

Wrought Iron Padlocks—
 Britan, Graham & Mathes, list Jan. 1894.....75¢
 Mallory, Wheeler Co., list Jan. 1, 1894.....75¢
 Norwich Lock Mfg. Co., list June 10, 1891.....50¢
 Russell & Erwin Mfg. Co., list June 10, 1891.....50¢
 Sargent & Co., list January 1, 1894.....75¢
 William Wilcox Mfg. Co., list January 1, 1894.....75¢
 Ames Sword Co. up to No. 150.....40¢
 Ames Sword Co. above No. 150.....40¢
 Barnes Mfg. Co.....40¢
 Champion Padlock.....40¢
 A. E. Deltz.....40¢
 Eagle.....40¢
 Eureka, Eagle Lock Co.....40¢
 E. T. Fram's Keystone Scandinavian 100 line.....90¢
 120 line.....90¢
 100 line.....90¢
 510 line.....70¢
 225, 610 and 200 lines.....70¢
 All other numbers.....50¢
 Horseshoe.....\$2.00, 50¢
 Hotchkiss.....30¢
 Nock's.....30¢
 Romer's No. 100.....30¢
 Romer's Scandinavian & No. 100 to 505.....15¢
 Scandinavian.....90¢
 Slaymaker, Barry & Co. No. 1010 line.....90¢
 No. 41 line.....50¢
 No. 61 line.....50¢
 No. 21 line.....50¢
 Star.....60¢
 Yale Lock Mfg. Co.'s.....net prices

Sash, &c.—

Attwell Mfg. Co.....25¢
 Champion Safety list January 1893.....70¢
 Clark's No. 1, 10; No. 2, 3 gr.....33½¢
 Common Sense, Jap'd, Cop'd and Brzed.....gr \$4.00
 Common Sense, Nickel Plated.....gr \$10.00
 Corbin's Daisy, list Feb. 15, 1893.....70¢
 Davis Bronze, Barnes Mfg. Co.....30¢
 Ferguson's.....30¢
 Fish (Liesche's Pat.), No. 100, gr.....\$8.00
 No. 105, gr.....\$10.00
 Giant, list Jan. 1892.....70¢
 Hammond's Window Springs.....40¢
 Huganin's New Wash Locks.....25¢
 Huganin's Wash Balances.....25¢
 Ives' Patent.....60¢
 Kempshall's Gravity.....60¢
 Kempshall's Model.....60¢
 Monarch.....50¢
 Payson's Perfect.....60¢
 Reading.....60¢
 Security.....70¢
 Universal.....70¢
 Victor.....60¢
 Walker's.....10¢
 Wolcott's.....60¢

Lumber Tools—

See Tools, Lumber.

Lustro—

Four-ounce bottles.....\$1.75; \$2.00 gross.....\$17.00

Machines.

Boring—

Without Angers. Upright. Angular.
 Boss, Carpenters' 3.60
 Boss, Ship Bldrs' 3.85
 Douglas.....\$5.50
 Jennings.....5.50
 Millers Falls.....7.50
 Phillips' Patent with Auger.....7.00
 Snell's, Rice's Pat 5.50.....67.50, 40¢
 Fluting—
 American, 5 in., \$3.00; 6 in., \$3.40; 7 in., \$4.50 each.....35¢
 Combined Fluter and Sad Iron.....\$15.00, 30¢
 Crown, 4½ in., \$3.50; 6 in., \$4.40; 8 in., \$6.50 each.....35¢
 Crown Hand Fluter, No. 1, \$16.00; 2, \$12.50; 3, \$10.00, 4, \$8.25.....35¢
 Crown Jewel, 6 in., \$8.50 each, 35¢
 Domestic Fluter.....each, \$1.50
 Eagle, 4½-inch Rolls, \$2.15.....35¢
 Eagle, 6½-inch Rolls, \$2.85.....35¢
 Geneva Hand Fluter, White Metal.....\$2.15, 25¢
 Knox, 4½-inch Rolls.....\$3.25 each, 35¢
 Knox, 6-inch Rolls.....\$3.60 each, 35¢
 Shepard Hand Fluter, No. 85, per doz \$15.50.....40¢
 Shepard Hand Fluter, No. 95, per doz \$8.00.....40¢
 Shepard Hand Fluter, No. 110, per doz \$11.00.....40¢

Hoisting—

Moore's Anti-Friction Differential Pulley Block.....20¢
 Moore's Hand Hoist with Lock Brake.....30¢
 Moore's Rope Differential Pulley Block.....60¢
 Maris & Beekley (Teal Patent).....30¢
 See also Blocks.
 Washing—
 Fair and Square.....per doz \$22.00
 Anthony Wayne, per doz, No. 1, \$42; No. 3, \$36; No. 3, \$42.....\$39.00
 Wayne American.....per doz \$39.00
 Wellsell.....per doz \$44.00
 Western Star, per doz, No. 2, \$36; No. 3, \$39

Mallets—

B. & L. Block Co., Hickory & L. V. 30&10&40¢
 Fibre Head, Stearns.....33½¢
 Hickory.....20&10&20&10&10¢
 Lignumvite.....20&10&20&10&10¢

Mattocks—Regular list.

60&10&60&10&5¢

Measures—

Standard Fireware, No. 1, peak per dozen, \$3.60; ¼-peck, \$3.15

Meat Cutters—

See Cutters, Meat.

Menders, Harness—

per doz.....\$2.50

Milk Cans—See Cans, Milk.

Mills—

Coffee—

Box and Side, list Jan. 1, 1893.....60¢
 Net prices are often made which are lower than above discount.

American, Enterprise Mfg. Co., list Jan. 17, 1893.....20¢
 National list, Jan. 1, 1894.....30¢
 Swift, Lane Bros.....30¢
 Waddell's New Box Mills, Ideal Brand, New List.....60¢

Mincing Knives—

See Knives, Mincing.

Molasses Gates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Highest 10 in. 12 in. 14 in. grade.....\$4.00, \$5.25, \$6.00, \$5.00, \$6.75
 Good.....\$3.00, \$3.25, \$3.50
 Cheap.....2.25, 2.50, 2.75

Muzzles—

Safety.....per doz, \$3.00, 25¢

Nails—

Cut and Wire. See Trade Report.

Wire Nails, Papered.

Association list, May 1, '92.....85¢
 Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos. 6 7 8 9 10
 A. C.....25¢, 23¢, 22¢, 21¢, 21¢

American.....9¢, 9¢, 9¢, 9¢, 9¢
 Anchor.....23¢, 21¢, 20¢, 19¢, 18¢
 Ausable.....23¢, 20¢, 26¢, 24¢, 23¢

Capewell.....10¢, 10¢, 17¢, 16¢, 16¢
 C. B. K.....25¢, 23¢, 22¢, 21¢, 21¢

Champion.....25¢, 23¢, 22¢, 21¢, 21¢
 Champlain.....23¢, 20¢, 26¢, 24¢, 23¢

Clinton, Fin.....10¢, 17¢, 16¢, 15¢, 14¢
 Empire Bronzed.....1¢, 11¢
 Essex.....23¢, 21¢, 20¢, 24¢, 23¢

Lyra.....9¢, 9¢, 9¢, 9¢, 9¢
 Maud S.....25¢, 23¢, 22¢, 21¢, 21¢

Northwestern.....25¢, 23¢, 22¢, 21¢, 21¢
 Putnam.....23¢, 21¢, 20¢, 19¢, 18¢

Snowden.....9¢, 9¢, 9¢, 9¢, 9¢
 Standard.....23¢, 21¢, 20¢, 19¢, 18¢
 Vulcan.....23¢, 21¢, 20¢, 19¢, 18¢

Western.....23¢, 21¢, 20¢, 19¢, 18¢

Picture—

Brass Head, Combination list.....50¢
 Brass Head, Sargent's list.....60¢
 Porcelain Head, Combination list.....40¢
 Porcelain Head, Sargent's list.....50¢
 Niles' Patent.....40¢

Nail Pullers—See Pullers, Nail.

Nail Sets—See Sets, Nail.

Nut Crackers—

See Crackers, Nut.

Nuts—List Dec. 18, 1889.

Square, Hex.
 Cold Punched.....\$3.00, 5.10 off list
 Hot Pressed.....5.80, 6.50 off list
 In packages of 100 lb, add 1-10¢ lb, net; in packages less than 100 lb, add ¼¢ lb, net.

Oakum—

Best or Government.....\$1.00, 6¢
 Navy.....\$1.00, 6¢
 U. S. Navy.....\$1.00, 6¢

Oil Tanks—See Tanks, Oil.

Oilers—

Brass and Copper.....50¢
 Zinc and Tin.....70¢
 Broughton's Brass.....50¢
 Broughton's Zinc.....50¢
 Malleable, Hammers' Improved No. 1, \$3.60; No. 2, \$4.00; No. 3, \$4.40

Malleable, Hammers' Old Pattern, same list.....45¢
 Olmstead's Brass and Copper.....50¢
 Olmstead's Tin and Zinc.....50¢
 Lyra's Pat. or "Paragon" Brass.....50¢
 Prior's Pat. or "Paragon" Zinc.....50¢

Steel, Draper & Williams.....50¢
 Wilmot & Hobbs Mfg. Co., Steel Anti-Rust.....40¢

Openers, Can—

American.....per gross \$1.75, \$2.00
 Champion.....per doz \$2.00.....45¢
 Domestic.....per doz \$2.00.....45¢
 Duplex.....per doz \$2.50, 15¢
 Eureka.....per doz \$2.50, 15¢
 Excelsior, No. 1, \$2.50; No. 2, \$1.50.....40¢
 French, No. 4.....per doz \$2.25, 55¢
 Iron Handle, No. 5.....per gross \$5.00, 45¢
 Lyra's Pat. or "Paragon" Brass.....50¢
 Messenger's Comet.....per doz \$3.00, 25¢
 Moore's.....per doz \$2.75, 30¢
 Sardine Scissors.....per doz \$2.75, 30¢
 Sprague, No. 1, 55¢; 2, 60¢; 3, 65¢
 Star.....per doz \$3.00, 25¢
 Universal.....per doz \$3.00, 25¢
 World's Best.....per gross \$1.00, \$1.20; No. 2, \$2.40; No. 3, \$3.00.....50¢

Packing, Steam—

Rubber—

Standard, fair quality.....70¢
 Inferior quality.....75¢
 Extra.....60¢
 Jenkins' Standard.....\$1.00
 N. Y. B. & P. Co., Double Diamond.....60¢
 N. Y. B. & P. Co., Samsamander.....45¢
 N. Y. B. & P. Co., Carbon.....70¢

Miscellaneous—

American Packing.....9¢
 Cotton Packing.....14¢
 Italian Packing.....12¢
 Jute.....6¢
 Russia Packing.....13¢

Pails—

S. S. & Co.: 18-qt., \$7.00; 20-qt., \$7.25

per doz.....5¢

Galvanized Pails—

Light. Heavy.
 10 Quart.....\$2.00, \$2.25
 12 Quart.....2.25, 2.50
 14 Quart.....2.50, 2.75

Galvanized Buckets—

Fire. Well.
 10 Quart.....\$2.50, \$2.75
 12 Quart.....2.75, 3.00
 14 Quart.....3.00, 3.25

Indurated Fiber Ware

Fire Pails, deep.....per doz \$4.80
 Fire Pails, round bottom.....per doz \$5.40
 Milk, 14 qt.....per doz \$5.40
 Stable, 14 qt.....per doz \$6.00
 Star Pails, 12 qt.....per doz \$4.20

Standard Fiber Ware—

Buggy Pails.....\$3.00
 Chamber Pails, 14 qt.....6.00
 Dairy Pails, 14 qt.....3.75
 Fire Pails, No. 1, 12 qt.....per doz 3.75
 Fire Pails, No. 2, 14 qt.....per doz 4.25
 Horse Pails.....4.00
 Slop Jars (bal. trap).....7.50
 Sugar Pails.....5.00
 Water Pails, 12 qt., per doz.....3.15

Pans—

Dripping—

Large sizes.....per doz \$5.00
 Small sizes.....per doz \$4.00
 Silver & Co. (Covered).....40¢

Fry—

Standard List: 1 2 3 4
 No. 1.....\$3.75, \$4.25, \$4.75, \$5.25
 No. 2.....5.00, 5.50, 6.00, 6.50
 No. 3.....6.00, 6.50, 7.00, 7.50
 Polished, regular goods.....75¢
 Acme Fry Pans.....60¢

Dust—

Steel Edge, No. 1.....per doz \$1.75

Roasting and Baking—

Columbian, S. S. & Co.: Nos. 10, \$2; 20, \$2.25; 30, \$2.50 each.....60¢

Paper and Cloth—

Sand and Emery—
 List April 13, 1893.....50¢
 Silby's Emery and Crocus Cloth.....30¢

Parers—

Apple—

Advance.....per doz \$4.75
 Baldwin.....per doz 5.25
 Bonanza.....each 5.00
 Daisy.....per doz 4.00
 Dandy.....each 7.50
 Eclipse.....per doz 4.00
 Eureka, 1888.....each 18.00
 Family Bay State.....per doz 12.00
 Favorite.....per doz 5.00
 Gold Medal.....per doz 4.00
 Ideal.....per doz 4.00
 Improved Bay State.....per doz 27.00
 Little Star.....per doz 4.50
 Monarch.....per doz 13.50
 No. 1 Lighting.....per doz 5.50
 Oriole.....per doz 3.00
 Penn.....per doz 4.00
 Perfection.....per doz 4.00
 Pomona.....per doz 4.00
 Reading 72.....per doz 4.25
 Reading 78.....per doz 7.00
 Reading Table.....per doz 6.00
 Turn Table.....per doz 13.50
 Victor.....per doz 4.00
 Waverly.....per doz 4.00
 White Mountain.....per doz 4.00

Potato—

Antrim Combination.....per doz \$5.50
 Booster.....per doz \$13.50
 Saratoga.....per doz \$5.50
 White Mountain.....per doz \$4.50

Pencils, Soapstone—

See Crayons.

Pickers, Fruit—

Prize Fruit Pickers.....50¢

Picks—

Railroad or Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00.....60¢

Picture Nails—

See Nails, Picture.

Pinking Irons—

See Irons, Pinking.

Pins—

Humason, Beckley & Co.'s.....60¢
 Peck, Stow & W. Co.....50¢
 Sargent & Co.'s, \$17 and \$18.....60¢

Escutcheon—

Brass.....70¢
 Iron, list Nov. 11, 1885.....75¢

Pipe, Wrought Iron—

14 and under, Plain.....67¢
 14 and under, Galv.....60¢
 14 and over, Plain.....67¢
 14 and over, Galv.....67¢
 Boiler Tubes, list Oct. 24, 1892.....65¢

Planes and Plane Irons—

Wood Planes—

Molding.....40¢
 Bench, First quality.....45¢
 Bench, Second quality.....50¢
 Bailey's (Stanley R. & L. Co.).....60¢

Iron Planes—

Bailey's (Stanley R. & L. Co.).....50¢
 Birmingham Plane Co.....60¢
 Chaplin's Iron Planes.....60¢
 Davis Iron Planes.....60¢
 Gage Tool Co.'s Self-Setting.....60¢
 Meriden Mal. Iron Co.'s.....60¢
 Miscellaneous Planes (Stanley R. & L. Co.).....60¢
 Sargent's.....60¢
 Standard Tool Co.....60¢
 Stearns Iron Planes.....60¢

Plane Irons—

Aburn Thistle.....80¢
 Buck Bros.....80¢
 Butcher's.....\$5.00, \$5.25 to \$5.50
 Ohio.....30¢
 Sandusky.....30¢
 Stanley R. & L. Co.....60¢
 L. & J. White.....35¢

Plates—

Felloe.....per doz 60¢

Pliers and Nippers—

Button's Patent.....60¢
 Casewy's Pat. Wire Cutters.....20¢
 Cronk's 8 in., \$15.00; 10 in.....\$20.00
 Cronk's Button Pattern.....50¢
 Cronk's Carrier Pliers.....60¢
 Eureka Pliers and Nippers.....40¢
 Gas Pliers.....60¢
 Gas Pliers, Custer's Nickel Plated.....60¢
 Hall's No. 2, 6 in., \$13.50; No. 4, 7 in., \$21.00.....40¢
 Humason & Beckley Mfg. Co. 50&10&10¢
 Lindsay's Giant.....33½¢
 Morrill's Parallel, per doz.....\$12.00
 P. S. & W. Cast Steel.....50¢
 P. S. & W. Tinner's Cutting Nippers.....10¢
 Russell's Parallel.....25¢

Plumbs and Levels—

Regular List.....75¢
 Co. 100 ft.....10¢
 Davis Inclinator.....10¢
 Davis Iron Levels.....30¢
 Diston's.....50¢
 Pocket Levels.....70¢
 Stanley's Duplex.....20¢
 Stanley's Handy.....20¢

Poachers, Egg—

Buffalo Steam Egg Poachers, per doz. No. 1, \$6.00; No. 2, \$6.00.....33½¢
 Silver & Co., 6-Ring, per doz, \$4.00; 8-Ring.....\$2.00

Pokes, Animal—

Bishop's American.....per doz \$3.00
 Bishop's I. X. L.....per doz \$3.00
 Bishop's Steel Monarch.....per doz \$5.00
 Bishop's Oiler.....per doz \$3.00
 Bishop's Pioneer.....per doz \$3.75
 Bolding.....per doz \$3.00
 Buckeye, Single Stale.....per doz \$2.75
 Eagle, Double Stale.....per doz \$5.75
 Eagle, Single Stale.....per doz \$3.75
 Metallic Horse Poke.....per doz \$3.00

Police Goods—

Daley's Improved Handcuffs; 2 Hands, Polished, per doz, \$48.00; Nickle-plated, \$57.00; 3 hands, Polished, per doz \$72.00; Nickle-plated, \$84.00.....25¢
 J. P. Lovell's Police Goods.....25¢
 Newhall Ship Chandlery Co. Handcuffs, \$15.00 per doz.....25¢
 Towers's.....25¢

Polish—

Metal—

Gaston's Silver Compound.....33½¢
 Fastoline.....30¢
 Prestoline Paste.....33½¢
 Tanite Mills:
 Paste, ¼ lb tins.....gr, \$14.40
 Paste, 1 lb tins.....gr, \$36.00
 Liquid, 4 pint.....gr, \$36.00
 Powder, 1 lb.....gr, \$36.00
 Wynn's White St. 5¢, 6¢, 7¢, 8¢, 9¢, 10¢, 11¢

Black Eagle Benzine Paste, 5 and 10 lb cans.....12¢

Black Flag.....per gro \$7.20

Black Flag, 5 and 10 lb pails.....per doz \$7.20

Pullers Nail—

Beltspe..... * doz. \$24.00 40%
 Economy..... * doz. \$5.50 18.10%
 Giant, No. 2..... * doz. \$15.00 10.810%
 Giant, No. 2..... * doz. \$15.00 10.810%
 Pelican..... * doz. \$9.00 25.610%
 Seranton..... * doz. \$18.00 38.3810%

Pulleys—

Brass Screw..... 70%
 Hay Fork, "Anti-Friction," 5 in. solid..... 50%
 Hay Fork, "F" Common and Patent..... 20%
 Hay Fork, Moore's Anti-Friction 5 in. Wheel..... 40%
 Hay Fork, Reed's Self-Lubricating..... 60%
 Hay Fork, Solid Eye, 4.00: Swivel..... 50%
 Hay Fork, Stearns' Nos. 35 & 45..... 50.810%
 Hay Fork, Stearns' Nos. 15, 25, 55, 65, 68, 60%
 Hay Fork, Tarbox Pat. Iron..... 20%
 Hot House, Awning, &c..... 60.970%
 Japanned Clothes Line..... 60.110%
 Japanned Screw..... 70.10.810%
 Japanned Side..... 70.10.810%
 Moore's Ceiling or End, Anti-Friction..... 40%
 Moore's Dumb Waiter, Anti-Friction..... 40%
 Moore's Electric Light..... 38.3%
 Moore's Side, Anti-Friction..... 50%
 Sash (Auger Mortise)..... 60%
 Common Sense..... 60%
 Empire..... 60%
 Acme..... 60%
 Ideal, Nos. 2, 4, 10 & 15..... 90% less 1¢
 Star..... doz net.
 Ideal, Nos. 25 and 55..... doz. 22¢ net.
 On bbl. lots extra 5%.

Shade Rack..... 45%
 Shepard's Sash, No. 2..... doz 23¢ net
 Tackle Blocks—See Blocks.

Pumps—

Cistern, Best Makers..... 60.60.10%
 Pitcher Spout, Best Makers..... 67.60.70%
 Fitcher Spout, Cheaper G'ds..... 75.60.75.10%
 Myers' Pumps, low list..... 50%

Punches—

Avery's Revolving..... 40%
 Avery's Sawset and Punch—See Sawsets
 Bemis & Call Co.'s Cast Steel Drive..... 50.50%
 Bemis & Call Co.'s Check..... 50.50%
 Bemis & Call Co.'s Springfield Socket..... 65%
 Niagara Hollow Punches..... 20.2%
 Niagara Solid Punches..... 50%
 Rice Hand Punches..... 15%
 Saddler's or Drive, good..... 60.60%
 Spring, good quality..... doz. \$2.50 82.60
 Spring, Leach's Pat..... 1.15%
 Solid Timmers, P., S. & W. Co., * doz..... 50%
 Timmers' Hollow Punches, P., S. & W. Co..... 20.2%

Rail—

Barn Door, Light, In. 1/2 * 3/4 *
 Per 100 feet..... \$2.00 2.50 3.10, 10%
 B.D. for N. E. Hand..... Small. Med. Large.
 Per 100 feet..... \$3.15 2.70 3.25 Net
 Carrier, double braced, Steel Rail, *
 foot..... 34.44%
 Lundy Parlor Door, Planed Edge, * ft. 7.76
 Moody Steel Rail, * ft. 56..... 25.10%
 Moore's Steel Rail..... 25.10%
 Sliding Door, Bronzed Wt. Iron..... ft. 7.76
 Sliding Door, Iron, Painted..... ft. 4.40
 Sliding Door, Wt. Brass..... ft. 3.56, 40%
 Terry's Steel Rail..... ft. 4.40
 Victor Track Rail, 7 1/2 * foot..... 60.25%

Rakes—

Cast Steel, Association * ds..... 70.70.52.5%
 Cast Steel, out of * ds..... 70.70.52.5%
 Malleable, good..... 70.70.52.5%
 Malleable, low grade..... 75%
 Fort Madison Prize Bow Brace and
 Peerless..... 65%
 Fort Madison Steel Tooth Lawn Rake..... 60%
 \$6.00..... 25%
 Gibbs' Aome Lawn Rake..... doz. \$4.90
 Gibbs' Canton Lawn Rake..... doz. \$3.75
 Gibbs' Crown Lawn Rake, No. 1..... doz. \$4.90; No. 2, \$3.50
 Gibbs' Favorite Lawn Rake..... doz. \$3.90
 Gibbs' Hustler No. 0..... doz. \$4.25
 Gibbs' Hustler No. 1..... doz. \$4.40
 Oneida Lawn Rake..... doz. \$6.00

Razors—

Campbell Cutlery Co..... 50%
 Electric Cutlery Co..... Net prices
 Galvanic..... doz. \$15.00
 Jordan's AAA, new list..... Net prices
 Jordan's Old Faithful, new list Net prices
 J. B. Torrey Razor Co. Net prices
 Wostenholm and Butcher, \$10 to 20..... 10%

Razor Straps—

See Straps, Razor.

Reels, Clothes Line—

Stearns'..... 33.34.10%

Registers—

Moore's Bronze Finishes..... 70%
 Moore's Electroplated..... 75%
 Moore's Japanned..... 70%
 Moore's Solid Bronze..... 65%
 Moore's Stove Pipe..... 33%

Rings and Ringers—

Bull Rings..... 50.60.10%
 Hotchkiss' low list..... 30%
 Humason, Beckley & Co.'s..... 70.10.10%
 Peck, Stow & W. Co.'s..... 50.10.10%
 Sargent's..... 75.10.10%
 Union Nut Co..... 65%

Hog Rings and Ringers—

Blair's Hog Ringers..... * doz \$1.75
 Blair's Hog Ringers..... * doz 90¢ 11.00
 Brown's Ringers..... * doz \$1.00
 Brown's Ringers..... * doz \$1.00
 Champion Ringers..... * doz \$1.75
 Champion Ringers, Double..... * doz \$2.00
 Electric Hog Ringers..... * doz \$1.75
 Electric Hog Ringers..... * doz boxes \$1.25
 Hill's Improved Ringers..... * doz \$1.00
 Hill's Old Style Ringers..... * doz \$1.75
 Hill's Ringers..... * doz boxes 90¢ 11.00
 Hill's Tongs..... * doz \$2.50
 Major Ringers..... * doz \$1.75
 Major Ringers..... * doz 90¢ 11.00
 Perfect Ringers..... * doz \$2.00
 Perfect Ringers..... * doz boxes \$1.25
 Top of the Hill Ringers..... * doz 90¢ 11.00

Rivets and Burrs—

Copper..... 60.60.10%
 Coppered Iron, Betina Brand..... 50.5%
 Iron Norway, list Nov. 17, '87..... 70.10.10%
 Second quality..... 70.70.5%

Rivet Sets—See Sets.

Roasting and Baking Pans—See Pans, Roasting and Baking.

Reds—

Stair, Black Walnut..... * doz 40%
 Stair, Brass..... 25.50%

Rollers—

Acme Moore's Anti-Friction..... 55%
 Barn Door, Sargent's list..... 60.10.10%
 Moore's Barn Door Stay..... 50%
 Union Barn Door Roller..... 70%
 Thompson Mfg. Co.'s Lawn Rollers..... 30%

Rope—The following prices are for b. New York or factory, and are shaded 1/4¢ @ 1/2¢ on large lots; terms, 1 1/2 % for cash.

Manila, 7-16 in. diam. and larger..... 8 1/2¢ @ 8 3/4¢
 Manila, 1/4 and 5-16 in. * 7 1/2¢ @ 7 3/4¢
 Manila, Tarred Rope..... 8 1/2¢ @ 8 3/4¢
 Manila, Hay Rope, Med. M..... 6 1/2¢ @ 6 3/4¢
 Sisal, 7-16 in. and larger..... 5 1/2¢ @ 5 3/4¢
 Sisal, 1/4 and 5-16 in. * 5 1/2¢ @ 5 3/4¢
 Sisal, Hay Rope..... 4 1/2¢ @ 4 3/4¢
 Sisal, Tarred Rope..... 4 1/2¢ @ 4 3/4¢
 Sisal, Medium Lath Yarn..... 4 1/2¢ @ 4 3/4¢
 New Zealand..... 7-16 in. and larger..... 4 1/2¢ @ 4 3/4¢
 New Zealand, 1/4 inch..... 5 1/2¢ @ 5 3/4¢
 New Zealand, 1/4 and 5-16 in. * 5 1/2¢ @ 5 3/4¢
 New Zealand, Hay Rope..... 4 1/2¢ @ 4 3/4¢
 New Zealand, Tar d Rope..... 4 1/2¢ @ 4 3/4¢
 Cotton Rope..... 12 1/2¢ @ 12 3/4¢
 Jute Rope..... 12 1/2¢ @ 12 3/4¢

Wire—

List February, 1892. All kinds. 50 @ 50.5%

Rules—

Borwood..... 50.10.10% @ 50.10.10%
 Ivory..... 50.10%
 Starrett's Steel Rules and Straight Edges..... 25.10%

Sad Irons—See Irons, Sad.**Sand and Emery Paper and Cloth—**

See Paper and Cloth.

Sash Cord—See Cord, Sash.**Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.**Saws—**

Note.—Extra 5 @ 10% often given.

Atkins' Circular..... 50.10%
 Atkins' Cross Cuts, new list..... 40%
 Atkins' Mulay, Mill and Drag..... 60.10%
 Atkins' One-Man Saw..... 40%
 Atkins' Wood Saws..... 45.45.55%
 Diston's Circular and Mill..... 45.45.55%
 Diston's Cross Cut, list Jan. 1, '93..... 40.10%
 Diston's Hand..... 25%
 C. E. Jennings & Co.'s..... 25%
 Peace Circular and Mill..... 45.45.55%
 Peace Cross Cuts, list Jan. 1, '93..... 45.10%
 Peace Hand, Panel and Rip..... 25.25.55%
 Richardson's Circular and Mill..... 45.45.55%
 Richardson's X Cuts, list Jan. 1, '93..... 45.10%
 Richardson's Hand, &c..... 25.25.55%
 Simonds' Circular Saws..... 45.45.55%
 Simonds' Crescent Ground Cross Cut Saws..... 30%
 Simonds' Gang, Mill, Mulay and Drag..... 45.45.55%
 Wheeler, Madden & Clemson Mfg. Co. Cross Cuts, list Jan. 1, 1893..... 45.10%
 Hand, Panel and Rip..... 30.10%
 Woodrough & McFarlin..... 45.10%
 Cross Cuts, list Jan. 1, 1893..... 45.10%
 Hand, Panel and Rip..... 25.10%

Hack Saws—

Eureka and Crescent..... 25%
 Griffin's, complete..... 40.10.50%
 Griffin's Hack Saw Blades..... 40.10.50%
 Star Hack Saws and Blades..... 25%

Scroll—

Barnes' Builders' and Cab Makers' \$15.25..... 35%
 Barnes' Scroll Saw Blades..... 25%
 Lester, complete, \$10.00..... 25%
 Rogers, complete, \$4.00..... 25%

Saw Frames—

See Frames, Saw.

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Scale Beams—**

See Beams, Scale.

Scales—

Chatillon's Eureka..... 25%
 Chatillon's Favorite..... 40%
 Chatillon's Grocers' Trip Scales..... 50%
 Family, Tumbull..... 50.10%
 Hatch, Counter, No. 171, good quality..... * doz \$17.00 18.10%
 Hatch, Tea, No. 161..... * doz \$6.00 6.50%
 Riehle Bros' Platform..... 40.40.10%
 Union Platform Plain..... 22.00 23.10%
 Union Platform, Striped..... 22.15 23.10%

Scissors, Fluting—

45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.)..... \$6.00..... 40.10%
 Box, 1 Handle..... * doz \$2.00
 Box, 2 Handle..... * doz \$3.00 4.00
 Defence Box and Ship..... 20.10%
 Foot..... 60.10.60%
 Ship, Common..... * doz \$3.50
 Ship, R. I. Tool Co..... 10%

Screen Window and Door

Frames—See Frames

Screw Drivers—

See Dr. Scrs. Screw

Screws—**Bench and Hand—**

Bench, Iron..... 55.10.55.10.10%
 Bench, Wood, Beech..... * doz \$2.25
 Bench, Wood, Hickory..... 20.10%
 Band, Wood..... 25.10.25.10.55%
 Hand, Grand Rapids, list..... 55%

Coach, Lag and Hand-Rail—

Lag, Blunt Point, list Jan. 1, 1890..... 80.10.80.25%
 Coach and Lag, Gimlet Point, list Jan. 1, 1890..... 80.10.80.20%
 Hand Rail, Am. Screw Co..... 75%
 Hand Rail, H. & B. Mfg. Co..... 70.10.75%
 Hand Rail, Sargent's..... 70.10%

Jack Screws—

Millers Falls..... 50.10.10%
 Millers Falls, Koller..... 50.10%
 P., S. & W..... 35%
 Sargent..... 70%
 Stearns..... 40.10%

Cork—

Detroit Cork Screw Co..... 33.34%
 Humason & Beckley Mfg. Co. 40.10.50%
 Williams'..... 33.34.33.34%
 Williamson's Forged Worm, Applewood Handle, * doz., \$5.00; Rosewood, \$5.50..... 40%

Machine—

Flat Head Iron..... 70%
 Round Head Iron..... 65%

Wood—

List January 1, 1891.
 Flat Head Iron..... 8%
 Round Head Iron..... 7%
 Round Head Brass..... 7%
 Flat Head Bronze..... 8%
 Round Head, Bronze..... 7%
 Rogers' Drive Screws..... 82.4%
 Extra 10% often given.

Scroll Saws—See Saws, Scroll.**Scythes—**

Grain..... 40.50.40.10%
 Grass..... 40.10.50%

Scythe Snaths—

See Snaths, Scythe.

Sets—**Awl and Tool—**

Aiken's Sets, Awls and Tools..... 50.60.55%
 Common Brad Sets..... 50.60.55%
 No. 42, \$10.50; No. 43, \$12.50..... 70.10.55%
 Fray's Add. Tool Hds., Nos. 1, \$12; 2, \$15; 3, \$18..... 45%
 Henry's Combination Haft..... * doz \$5.50
 Millers Falls Ac. Tool Hds., No. 1, \$12; No. 4, \$12; No. 5, \$18..... 25%
 Stanley's Excelsior..... No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50..... 80.10%

Nail—

Round..... * gr. \$3.25
 Square..... * gr. \$4.00 4.25
 Buck Bros..... 27%
 Cannon's Diamond Point..... * gr. \$12, 20%

Rivet—

Regular list..... 70%

Saw—

Atkin's Criterion..... * doz No. 1, \$6.00
 Aiken's Genuine..... \$15.00, 50.10.90%
 Atkin's Combination..... * doz \$3.00
 Atkin's Lever..... * doz No. 1, \$6.00
 Avery's Saw Set and Punch..... 50%
 Bemis & Call Co.'s Cross Cut..... 30.25%
 Bemis & Call Co.'s Plate..... 20%
 Bemis & Call Spring Hammer..... 30.25%
 Common Lever..... * doz \$2.00, 45.60%
 Crescent..... \$2.00 (Koller) No. 1, \$15.00; No. 2, \$24.00..... 40.10.50%
 Diston's Star..... 25%
 Hammer, Bemis & Call Co.'s new Pat. 45%
 Hammer, Hotchkiss..... \$5.50, 10%
 Hart's Pat. Lever..... 20%
 Kohler's Giant Royal..... * doz \$7.00
 Kohler's Royal..... * doz \$7.00
 Leach's, No. 0, \$8.00; No. 1, \$15..... 40.10.50%
 Leopold..... 40.10.50%
 Lloyds' Acme..... * doz \$15, 40.10%
 Morrill's No. 1, \$15.00..... 40.20%
 Nos. 3 and 4, Cross Cut, \$23.00..... 40.20%
 No. 5, Mill..... \$1.00, 40.20%
 No. 6, Mill..... \$1.50, 40.20%
 No. 11, \$16.00..... 40.20%
 Nash's..... 20.10.40%
 Sullivan's Genuine..... * doz \$5.00 7.75%
 Stillman's Pattern, Hand, * doz \$2.50
 Cross Cut, \$3.00..... 55.55.10%
 Tumbull Positive..... * doz \$18, 50%

Sharpeners, Knife—

Applewood Handles..... * doz \$6.00, 50%
 Rosewood or Corobola..... * doz \$9.00 50%
 Tanite Mills..... * gr., \$14.40..... 25.33.34%

Shaves, Spoke—

Iron..... 45%
 Wood..... 30%
 Bailey's (Stanley R. & L. Co.)..... 60.10%
 Cincinnati..... 25.10%
 Goodell's * doz. \$9.00..... 25%
 Stearns..... 40.10%

Shears—

Acme Cast Shears..... 10.10%
 American (Cast) Iron..... 75.10.75.10.5%
 Barnard's Lamp Trimmers..... * doz. \$3.75
 Cast Steel Trimmers:
 First quality..... 80.10.80.10%
 Second quality..... 80.10.80.10%
 Campbell Cutlery Co., Jap'd..... 55%
 Claus brand, Japanned..... 70%
 Claus brand, Nickel, same list..... 60%
 Clipper..... 10.10%
 Davenport Cutlery Co..... 60.60.10%
 Diamond Cast Shears..... 10%
 Electric Cutlery Co..... * doz. \$1.00 1.25%
 Galvanic 3/4 to 9 in. * doz. \$1.00 * doz. \$1.00
 Hatch Cutlery Co. Solid Steel Forged..... 60%
 Heinich's, list Dec. 1881..... 60.10.10% @ 60.10.10.5%
 Heinich's Tailor's Shears..... 33.34%
 Howe Bros. & Hulbert, Solid Forged Steel..... 40%
 Seymour's, list Dec. 1881..... 60.10.10% @ 60.10.10.5%
 Victor Cast Shears..... 75.10.75.10.5%

Timbers' Snips—

Cast Handles, Iald with Steel..... 40%
 Niagara Snips and Shears..... 20.10%
 Wrt. Handles, Steel Blades..... 1.10.10%

Pruning Shears and Hooks—

Diston's Combined "Pruning" Hook and Saw..... * doz. \$18.00, 20.10%
 Diston's Pruning Hook..... * doz. \$12.00
 Dunlap's Saw and Chisel..... * doz \$5.50, 30%
 Henry's Pruning Shears..... * doz. \$4.25 @ \$4.50
 E. S. Lee & Co.'s Pruning Tools..... 50.10.70%
 Levin Pruner No. 1, \$15.00 * doz. 40.45%
 Levin Pruner No. 2, \$21.00 * doz. 40.45%
 J. Mallinson & Co. No. 1, \$5.25; No. 2, \$7.25
 Pruning Shears, Henry's Pat. * doz. \$3.50 @ \$4.00
 P., S. & W. Co..... 60%
 Wheeler, M. & C. Co., Combination..... * doz \$12.00

Timmers', &c.—

Shears and Snips (P. S. & W.)..... 20.25%
 Snips, J. Mallinson & Co..... 33.34%

Sheaves—**Sliding Door—**

Corbin's list..... 60.10.25%
 M. W. Co., list July, 1888..... 50.10.60.5%
 Moore's Anti-Friction..... 50%
 Patent Roller..... 60.10.25%
 Patent Roller, Hatfield's..... 75%
 R. & E., list Dec. 18, 1885..... 55.20%
 Russell's Anti-Friction, list Dec. 18, 1885..... 60.25%

Sliding Shutter

Reading list..... 60.10.10%
 R. & E., list Dec. 18, 1885..... 60.10.25%
 Sargent's list..... 70%

Shells—

Brass Shot Shells, Club, Rival, Climax..... 65.2%
 Brass Shot Shells, 1st quality..... 60.2%
 First quality 4, 8, 10 and 12 gauge..... 25.10.2%
 First quality Rival, Club and Climax brands, 14, 16 and 20 gauge (37.50 list)..... 20.10.2%
 Frise..... 40.25%
 Smokeless brand, 12, 10, 16 gauge..... 35.10.25%
 Star, Club, Rival and Climax Brands..... 33.34.10.25%
 Trap brand, 12 and 10 gauge..... 35.10.25%

Shells, Loaded—

Standard list, July 19, 1890..... 40.10.10% @ 40.10.10.10%
 2% cash, 10 days.

Ship Tools—

L. & J. White..... 20.25

Shoes, Horse, Mule, &c.—

Burden's, Perkins', Phoenix, Standard, Diamond State, Bryden's Box and Crescent..... \$3.50 @ \$4.00
 Bryden's Frog Pressure, at factory, \$5.00

Mule—

Add 1¢ keg to above prices.

Ox Wrought—

Ton lots..... * doz 90%
 1000 lb lots..... * doz 94%
 500 lb lots..... * doz 94%

Shot—

Drop, up to B, 25-b bag..... \$1.15
 Drop, up to B, 5-b bag..... 35%
 Drop, B and larger, 25-b bag..... 1.40
 Drop, B and larger, 5-b bag..... 40%
 Buck and Chilled, 25-b bag..... 1.40
 Buck and Chilled, 5-b bag..... 2.00
 Dust Shot, 25-b bag..... 2.00
 Dust Shot 5-b bag..... 45%
 In ton lots of 25 bags (25 m. in case, and 25% for cash).

Snaps, Harness, &c.
 Andrews, I. & S. Aug. Co., 68
 Cover's Saddlery Works, Triumph, 38
 Covered Spring, 60x10x10
 Covert, 50x10x5x2
 Covert, New Patent, 50x10x5x2
 Covert, New R. E., 60x10x5x2
 Fitch's (Bristol), 60x10x5
 German, new list, 40x10
 Hotchkiss, 10x
 Kelley & Woolworth's Steel Harness, 50x10x60
 John Protz Snaps, 75x75x5
 Sargent's Patent Guarded, 70x10x10

Snaths
 Seythe, 50x2x50x10x

Soldering Irons
 See Irons, Soldering.

Spittoons, Cuspidors, &c.
 Standard Fiberglass
 Cuspidors, 5/8-inch, 1/2 doz., No. 5, \$3; No. 5, \$9
 Spittoons, Daisley, 8-inch, No. 1, 10 and 11 inch, \$6.

Spoke Shaves
 See Shaves, Spoke.

Spoke Trimmers
 See Trimmers, Spoke.

Spoons and Forks
 Tinned Iron
 Basting, Cen. Stamp. Co.'s list, 70x25
 Buffalo, S. S. & Co., 38x25
 Solid Table and Tea, Cen. Stamp. Co.'s list, 70x25

Silver Plated
 4 months or 5% cash 30 days:
 L. Boardman & Son, 50x12x4
 Holmes & Edwards Silver Co., 40, 15x5
 Meriden Brit. Co., Rogers, 40x15
 Reed & Barton, 40x15
 Rogers & Bros., 40x15
 C. Rogers & Bros., 40x15
 Rogers & Hamilton, 40x15
 Wm. Rogers Mfg. Co., 40, 15x5
 Simpson, Hall, Miller & Co., 40, 15x5

Miscellaneous
 Boardman's Britannia Spoons, case lots, 60x55 cash
 Boardman's Nickel Silver, list July 1, 1891, 60x77x55
 Britannia, 60x60x55
 German Silver, 60x60x55
 Nickel Silver, 60x60x55
 Holmes & Edwards Silver Co., 40x15
 No. 24 German Silver, 50x10x5
 No. 30 Silver Metal, 50x10x5
 No. 49 Nickel Silver, 50x10x5
 No. 60 Nickel Silver, 50x10x5
 No. 67 Mexican Silver, 50x10x5
 Rogers & Hamilton, 40x15x5
 Clometar, Flatware, 40x10
 Clometar, Steel Goods, 40x10
 Crown Hamilton, Flatware and Cutlery, 30x
 Steel Goods, 40x10
 Wm. Rogers Mfg. Co., 60x60
 13% Rogers' German Silver, 60x60
 25% Rogers' Nickel Silver, 60x60
 Rogers' Silver Metal, 50x10x5

Springs, Door
 Champion (Coll), 60x10x60x10x10
 Cowell's, No. 1, 1/2 doz \$18.00; No. 2, \$15.00
 Gem (Coll), list April 19, 1888, 20x
 Hercules, 50x50x10
 Rubber, complete, 1/2 doz \$4.50, 56x10
 Star (Coll), list April 19, 1888, 20x10
 Torrey's Rod, 39 in., 1/2 doz \$1.20x1.5
 Warner's No. 1, 1/2 doz \$1.50; No. 2, \$3.40
 Victor (Coll), 60x10x60x10x5
Carriage, Wagon, &c.
 Elliptic, Concord, Platform and Half Scroll, 60x10x60x10x10 or net prices
 Cuff's Roller Springs, 25x

Sprinklers, Lawn
 Gibbs' Arc, 1/2 doz., \$2.00
 Gibbs' Hustler, 1/2 doz., \$6.00

Squares
 Nickel-plated, 80x10x10x5x5x1
 Steel and Iron, 60x10x10
 Try Square and T Bevels, 60x10x10
 Avery's Bevel Protractor, 50x
 Avery's Flush Bevel Squares, 40x
 Diston's Try Square and T Bevels, 50x
 Starrett's Micrometer Caliper Squares, 25x
 Winterbottom's Try and Miter, 30x10

Squeezers
 Blair's, 1/2 doz \$2.00
 Blair's "Olimax", 1/2 doz \$1.25

Lemon
 Porcelain Lined, No. 1, 1/2 doz \$6.00, 25x30x
 Wood, Common, 1/2 doz \$1.70x1.75
 Wood, No. 2, 1/2 doz \$3.00, 35x
 Dean's, No. 1, 1/2 doz \$6.50, 2, \$3.35, 3, \$1.90; Queen, \$2.50
 Dunlap's Improved, 1/2 doz \$3.75, 20x
 Hotchkiss Straight Flash, 1/2 doz \$12.00
 Jennings' Star, 1/2 doz \$2.50
 King, 40x55
 Little Giant, 50x60x55
 Sammie, No. 1, \$5.00; No. 2, \$9; 12, \$18
 The Boss, 1/2 doz \$2.50

Standard Fiber Ware
 See Ware, Standard Fiber.

Staples
 Barbed Blind, 1/4 in. and larger, 1/2 doz \$7.75
 Barbed Blind, 1/4 in., 1/2 doz \$8.85
 Fence Staples, Galvanized, Same price
 Fence Staples, Plain, 1/2 doz \$7.00
 Grand Crossing Tack Co.'s list, 75x10x

Steel Butchers'
 C. & A. Hoffmann's, 40x
 Nichols Bros., 40x10x

Steeleyards
 Stocks and Dies
 Blacksmith's:
 Butterfield's Goods, 35x
 Waterford Goods, 35x
 Gardner, 25x
 Green River, 25x
 Lightning Screw Plate, 25x30x
 Reece's New Screw Plates, 25x30x
 Reversible Ratchet, 30x

Stone
 Stones, Grind—See Grindstones.
 Scythe Stones
 Pike Mfg. Co., list April, 1892, 38x
 Cleveland Stone Co., list Nov 1892, 38x

Oil Stones, &c.
 Pike Mfg. Co., 38x
 Hindman No. 1, 1/2 doz \$8
 Sand Stone, No. 1, 1/2 doz \$8
 Turkey Oil Stone, 4 to 8 in., 10x
 Turkey Slips, \$2.00
 Lily White Washita, 60x
 Rosy Red Washita, 60x
 Washita Stone, Extra, 60x
 Washita Stone, No. 1, 60x
 Washita Stone, No. 2, 60x
 Lily White Slips, 90x
 Rosy Red Slips, 90x
 Washita Slips, Extra, 80x
 Washita Slips, No. 1, 70x
 Arkansas Stone, No. 1, 8 to 10 in., \$3.50
 Arkansas Stone, No. 1 1/2 to 5, \$3.50

Lake Superior
 Lake Superior Slips, 1/2 doz \$18
 Tanite Mills:
 Emery Oil, 1/2 doz, \$9.00, 50x65x

Stops, Bench
 Cincinnati, 25x10
 Crescent, 1/2 doz \$1.50
 Hotchkiss', 1/2 doz \$5, 10x10x10
 Jordan's, 1/2 doz \$3
 Millers Falls, 40x
 Morrill's, 1/2 doz, No. 1, \$10.00; No. 2, \$11.00
 Stearns', 40x20x
 Terrell's Nos. 1 and 2, 1/2 doz, \$3; No. 3, \$3.60
 Weston's, No. 1, \$10. No. 2, \$9.25x10x5x

Stove Polish
 See Polish, Stove.

Stretchers Carpet
 Cast Iron, Steel Points, 1/2 doz 75x80x
 Cast Steel, Polished, 1/2 doz \$2.25
 Bullard's, 25x25x10x

Strops Razor
 Badger's Belt and Com., 1/2 doz \$2.00
 Campbell Cutlery Co., Net prices
 Electric Cutlery Co., Net prices
 Genuine Emerson, 80x60x25
 Imitation, 1/2 doz \$2.00, 20x10x25
 Jordan's Pat. Padded, list Nov. 1, 89, 50x
 Lamont Combination, 1/2 doz \$4.00
 Torrey's, Net prices

Stuffer Sausage
 Miles' Challenge, 1/2 doz \$20, 50x50x25
 Perry, 1/2 doz, No. 1, \$15.00; No. 0, \$21.00
 Draw Cut No. 4, each \$30.00, 20x
 Enterprise Mfg. Co., list Jan 17, 93, 25x
 Silver, 40x10

Sweepers, Carpet and Lawn Carpet
 Acme, 1/2 doz \$26.00
 Advance, 1/2 doz \$18.00
 Banner Jap'd, 1/2 doz \$22.00; Nickel, \$24.00
 Bissell No. 6, 1/2 doz \$17.00
 Bissell No. 8, 1/2 doz \$20.00
 Bissell, Grand, 1/2 doz \$36.00
 Crown Jewel, No. 1, \$18.00; No. 2, \$20.00
 Domestic, 1/2 doz \$21.00
 Domestic, No. 2, 1/2 doz \$22.00
 Easy, Jap'd, 1/2 doz \$22.00; Nickel, \$24.00
 Excelsior, 1/2 doz \$22.00
 Imperial, 1/2 doz \$18.00
 Gilt Edge, 1/2 doz \$24.00
 Grand Rapids, 1/2 doz \$24.00
 Grand Republic, 1/2 doz \$24.00
 Jap'd, 1/2 doz \$30.00; Nickel, \$33.00
 Housewife's Delight, 1/2 doz \$15.00
 Imperial, 1/2 doz \$20.00
 Impaired Parlor Queen, 1/2 doz \$24.00
 Japanned, 1/2 doz \$27.00
 Ladies' Friend, 1/2 doz \$15.00
 Ladies' Friend No. 2, 1/2 doz \$18.00
 Magic, 1/2 doz \$15.00
 Model, 1/2 doz \$27.00
 Our Leader, 1/2 doz \$24.00
 Our Own, 1/2 doz \$27.00
 Rapid Jap'd, 1/2 doz \$22.00; Nickel, \$24.00
 Reliable, 1/2 doz \$22.00
 Standard, 1/2 doz \$24.00
 Supreme, 1/2 doz \$22.00
 The Star, 1/2 doz \$21.00
 Triumph, 1/2 doz \$20.00
 Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates
 5 dozen in 6 months, 1/2 doz \$1.00
 10 dozen in 6 months, 1/2 doz \$2.00
 Except on L.F., when 10 dozen price is \$18.50, and 25 dozen \$18.00.

Swings
 Thompson Mfg. Co., 80x
 Davies Lawn, 25x

Tacks, Brads &c.
 list October 19, 1889. Old established
 straight weights. Short weight goods
 are sold at lower prices.

Carpet Tacks
 American, Blued, 47x
 American, Tin'd and Cop'd, 52x
 Steel, Bright and Blued, 47x
 Steel, Tinned and Coppered, 52x
 Swedes Iron, S. S., Blued, 47x
 Swedes Iron, S. S., Tinned, 47x
 American Iron Tacks, Domestic, 37x
 American Iron Tacks, Foreign, 50x
 Swedes Iron Tacks—
 S. S., Blued, 37x
 S. S., Tinned, 45x
 Lanc., Blued, 30x
 Lanc., Tinned, 37x
 Upholsterers' S. S., 47x
 Upholsterers' Lanc., 37x
 Gimp Tacks—
 S. S., Blued, 30x
 S. S., Tinned, 42x
 Lanc., Blued, 20x
 Lanc., Tinned, 35x
 Basket and Trimmers' Tacks—
 Lanc., 20x
 S. S., 30x
 Hungarian Nails, 35x
 Common and Patent Brads, 35x
 Leathered Tacks, 5x
 Brush Tacks and Nails S. S., 20x
 Looking Glass Tacks, S. S., 12x
 Picture-Frame Points, S. S., 12x
 Lace Tacks, Blued, 12x
 Lace Tacks, Tinned, 20x
 Finishing Nails, 52x
 Trunk and Clout Nails—
 Tinned or Coppered, 52x
 Basket Nails, 87x
 Chair Nails, 35x
 Olgar Box Nails, 30x
 Tin Capped Nails, 50x

Miscellaneous
 Double Wire, 60x10x60x10x10x
 Wire Carpet Nails, 60x10x60x10x10x
 Blk Nye Brad Box, 1/2 doz \$1.50
 Bonnie Brine, 1/2 doz \$1.50
 Claw Handle Carrot, 1/2 gross \$4.00
 Home Tacks, No. 50, 1/2 case (12 cartons), \$86.00; No. 100, 1/2 case (12 cartons), \$72.00
 Home Nails, No. 200, 1/2 case (12 cartons), \$50.00; No. 400, 1/2 case (12 cartons), \$60.00
 Parishan Gilt Nails, cartoon, 50
 Plymouth Rock Carpet Tacks, 20x
 Upholsterers' Nails, 60x10x

Wire Brads and Nails
 Steel-Wire Brads, R. & E. Mfg. Co.'s list, 50x10x10x
 See also Nails, Wire.

Tanks, Oil
 Emerald, S. S. & Co.: 30-gal. \$8.75; 60-gal., \$11 each, 50x10x5x

Tapes, Measuring
 American, 40x10x50x
 Chesterman's, Regular list, 25x30x
 Excelsior, Special list, 20x
 Spring, 40x

Thermometers
 Tin Case, 30x50x10x

Thimble Skeins—See Skeins.
Ties, Bale—Steel.
 Standard Wire, list, 50x10x5x

Tinners' Shears, &c.
 See Shears, Tinners' &c.

Tinware
 Stamped, Japanned and Piced, list Jan 20, 1887, 70x10x70x25x

Tire Benders, Upsetters, &c.
 See Benders and Upsetters Tire.

Tobacco Cutters
 See Cutters, Tobacco.

Tools—Coopers'
 Alberson Mfg. Co., 25x
 Barton's, 30x20x25x
 Beatty's, 30x
 Bradley's, 20x
 Sandusky Tool Co., 30x30x5x
 Shaves Cincinnati Tool Co., 20x
 L. & I. J. White, 20x5x

Lumber
 Cant Hooks, Blue Line, 1/2 doz \$16.00
 Cant Hooks, Common Finish, 1/2 doz \$14.00
 Cant Hooks, Mail Socket Clasp, "Blue Line" Finish, 1/2 doz \$18.00
 Cant Hooks, Mail Socket Clasp, Common Finish, 1/2 doz \$14.50
 Cant Hooks, Clip Clasp, "Blue Line" Finish, 1/2 doz \$14.00
 Cant Hooks, Clip Clasp, Common Finish, 1/2 doz \$12.00
 Hand Spikes, 1/2 doz 6 ft., \$15.00; 8 ft., \$17.50; 10 ft., \$19.00; 12 ft., \$21.00; 14 ft., \$22.50; 16 ft., \$24.00; 18 ft., \$25.50; 20 ft., \$27.00
 Pike Poles, Pike & Hook, 1/2 doz, 12 ft., \$11.50; 14 ft., \$12.50; 16 ft., \$14.50; 18 ft., \$17.50; 20 ft., \$21.50
 Pike Poles, Pike only, 1/2 doz, 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18 ft., \$16.00; 20 ft., \$20.00
 Pike Poles, not ironed, 1/2 doz, 12 ft., \$8.00; 14 ft., \$7.00; 16 ft., \$9.00; 18 ft., \$12.00; 20 ft., \$16.00
 Mail, Iron Socket Peavies, 1/2 doz \$19.00
 Ring Peavies, "Blue Line", 1/2 doz \$20.00
 Ring Peavies, Common, 1/2 doz \$18.00
 Steel Socket Peavies, 1/2 doz \$21.00
 Setting Poles, 1/2 doz, 13 ft., \$14.00; 14 ft., \$15.00; 18 ft., \$17.00
 Swamp Hooks, 1/2 doz \$18.00

Saw
 Atkins', new list, 40x
 Simonds', 35x

Tramson Lifters
 See Lifters, Tramson.

Traps—Game
 Blake's Patent, 40x10x50x
 Newhouse, 40x10x50x5x
 Onelda Pattern, 75x75x10x5x

Mouse and Rat
 Cyclone, 1/2 gr \$5.25
 Dandy, 1/2 doz, \$1.75
 Hotchkiss Metallic Mouse, 6-hole traps, 1/2 doz, 75x; in full cases, 1/2 doz \$6.00x65x
 Hotchkiss Rat Killer, 1/2 gr \$18.50
 Hotchkiss New Rat Killer, 1/2 gr \$10.00
 Ideal, 1/2 gr \$10.00
 Mouse, Bonanza, 1/2 doz \$9.00x10.00
 Mouse, Cage, Wire, 1/2 doz \$2.50 10x
 Mouse, Catch-me-alive, 1/2 doz \$2.50 15x
 Mouse Wood, Choker, 1/2 doz \$10.00x10.00
 Mouse, Round Wire, 1/2 doz \$1.50 10x
 Rat, Decoy, 1/2 gr \$10.00, 10x
 Schuyler's Rat Killer, 1/2 gr \$15.00
 Waddell's Go Bang, 1/2 gr \$12.50

Fly
 Balloon, Globe or Acme, 1/2 doz \$1.50, 1/2 gr \$13.50
 Harper, Champion or Paragon, 1/2 doz \$1.75, 1/2 gr \$16.50

Triers
 Butter and Cheese, 25x

Trimmers, Spoke
 Bonny's, 1/2 doz \$10.00, 50x
 Ives', No. 1, \$15.00; No. 2, \$12.00, 50x
 Stearns', 55x10x
 Douglas', 20x10x
 Cincinnati, 1/2 doz \$9.00, 20x

Trowels
 Brade's Brick, 25x25x5x
 J. B. Block Co.'s list, 20x20x5x
 Diston's Brick and Plastering, 25x25x10x
 Lothrop's Brick and Plastering, 20x10x5x85x
 Peace's Plastering, 25x25x5x
 Reed's Brick and Plastering, 15x
 Rose's Brick, 15x20x
 Wormal's Brick and Plastering, 15x20x
 Cleves' Angle Trowel, 1/2 gr \$1.00, 20x
 No. 2, \$30; No. 3, \$15, net 10x
 Garden, 70x

Trucks, Warehouse, &c.
 R. & L. Block Co.'s list, 40x
 Barnes' Barrel Trucks, 40x
 Daisy Stove Trucks, Improved pattern, 1/2 doz \$18.50
 Thompson Mfg. Co., 40x

Tubes, Boiler
 See Pipe

Twine
 Flax Twine—
 No. 9, 1/4 and 1/2 Bails, 22x 29x
 No. 12, 1/4 and 1/2 Bails, 18x 24x
 No. 18, 1/4 and 1/2 Bails, 17x 20x
 No. 24, 1/4 and 1/2 Bails, 17x 20x
 No. 36, 1/4 and 1/2 Bails, 16x 19x
 Chalk Line, Cotton, 1/4 Bails, 17x
 Cotton Moss, 6, 9, 12x15 B to doz, 15x17x
 Cotton Wrapping, 5 Bails to B, 13x14x
 2-Ply Hemp, 1/4 and 1/2 Bails (Spring Twine), 10x10x
 3-Ply Hemp, 1/4 Bails, 10x10x
 3-Ply Hemp, 1/2 Bails, 10x10x
 2, 3, 4 and 5 Ply Jute, 1/4 B Bails, 10x10x
 Mason Line, Linen, 1/4 B Bails, 6x
 No. 264 Mattress, 1/4 and 1/2 Bails, 52x54x
 Paper, 10x11x
 Wool, 5x6x60x

Vises
 Solid Box, 50x10x60x

Parallel
 Backus and Union, 40x
 Bonney's, 50x
 Double Screw Leg, 15x10x
 Fisher & Norris Double Screw, 15x10x
 Hollands', 35x40x
 Howard's, 20x
 Massey Quick Action, 15x20x
 Merrill's Falls, 40x40x10x
 Moore's, 20x
 Parker's, 20x25x
 Prentiss', 20x25x
 Sargent's, 70x10x
 Simpson's Adjustable, 40x
 Stephens', 25x30x
 Trenton, 40x5x40x10x
 Wilson's, 55x

Saw Filers
 Bonney's, Nos. 2 & 3, \$15.00, 40x10x50x
 Economy, 1/2 doz, Nos. 110, \$10.00; 120, \$15.00
 Hopkins', 1/2 doz \$17.50, 10x
 Reading, 40x
 Stearns' Common, Nos. 0, 1, 2 & 3, 50x
 Stearns' Rubber Jaw, Nos. 1C & 33, 33x
 Wentworth, 20x10x

Miscellaneous
 Bauer's Pipe Vises, 10x
 Cincinnati, 25x10x
 Cowell Hand Vises, 20x
 Enterprise Pipe Vises, each \$3.00, 40x
 Massey Combination Pipe Vise, 40x
 Phoenix Vises, 33x45x
 Phoenix Hand Vises, 1/2 doz \$3.60, 33x45x

Wads—Price Per M.
 U.M.C. & W.R.A.—B. E., 11 up, 68x
 U.M.C. & W.R.A.—B. E., 9x10, 82x
 U.M.C. & W.R.A.—B. E., 8x, 96x
 U.M.C. & W.R.A.—B. E., 7 1/4 up, 110x
 U.M.C. & W.R.A.—P. E., 7 1/4 up, 110x
 U.M.C. & W.R.A.—P. E., 9x10, 150x
 U.M.C. & W.R.A.—P. E., 8, 170x
 U.M.C. & W.R.A.—P. E., 7, 180x
 Eley's B. E., 11 and larger, \$1.70x\$1.75
 Eley's P. E., 12 to 20, \$3.00x\$3.25

Wagon Boxes
 See Boxes, Wagon.

Wagon Jacks
 See Jacks, Wagon.

Ware, Hollow
 Cast Iron, Hollow
 Stove Hollow Ware—
 Ground, 60x10x60x10x10x
 Unground, 65x10x70x5x
 Gray Enamelled Ware—
 Stove, 50x50x5x
 Maslin Kettles, 60x10x60x11x10x
 Rollers and Saucepans, 40x55x40x10x
 White Enamelled Ware—
 Maslin Kettles, 70x10x75x5x
 Rollers and Saucepans, 60x60x10x
 Rustless Hollow Ware, 60x60x10x
 Tinned Boilers and Spans, 60x60x10x

Enamelled
 Agate and Granite Ware, list Jan. 1, 1894, 25x
 Ironclad Enamelled Ware, Old list, 50x10x

Kettles
 Galvanized Tea Kettles—
 Inch, 7 8 9
 Each, 55x 60x 65x 75x
Steel Hollow Ware
 Avery Spiders and Griddles, 60x70x
 Avery Kettles, 60x10x10x70x10x

Standard ribber
 Per Doz.
 Plain, Decorated, \$7.50

Cuspidors
 Half-peck Measure, \$3.00
 Peck Measure, 3.50
 Keelers, 1 1/2 in., 3.00
 Spittoons, "Daisy", 3 in., 3.50
 Wash-Basins, 10 1/2 in., 1.80
 Wash-Basins, 12 in., 2.00

Indurated Fiber
 Basins, Ringed, 1/2 doz, No. 2, 2.80
 Butter Bowls, 15, 17 and 19-inch (3 pieces), 1/2 nest, \$1.50
 Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), 1/2 nest, \$2.55
 Liquid Measures, pt., qt., 2 qt. and Tunnell (4 pieces), 1/2 set, \$1.20
 Spittoons No. 2, 1/2 doz, \$6.00
 Washbasins, Nested, Nos. 0, 1, 2, and 3 (4 pieces), 1/2 nest, \$5.75
 See also Pails.

Silver Plated, Hollow
 4 mo. or 5% cash in 30 days
 Meriden Britannia Co., 40x55x
 Reed & Barton, 40x15x
 Rogers & Bros., 40x15x
 Simpson, Hall, Miller & Co., 40x15x
 Hartford Silver Plate Co., 40x55x
 William Rogers Mfg. Co., 40x55x

Washers
 Size hole, 5-16 3/4 1/2 5/16 1/4
 Washers, 5/16 3/4 1/2 5/16 1/4
 In lots less than 2000, B, add 1/4, 5-5 boxes 14 to list

Washer Cutters
 See Cutters, Washers.

Water Coolers
 See Coolers, Water.

Wedges
 Iron, 1/2 doz \$2.25x2.50x
 Steel, 1/2 doz \$2.50x3.00x

Weights Sash
 Ton lots at foundry, 1/2 ton, \$15.00x16.00

Well Buckets Galvan-ized
 See Pails, Galvanized.

Wheels Well
 8 in., \$2.00; 10 in., \$2.50; 12 in., 2.75

Whips

American Whip Co.	Length.	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8 ft.
X. L. Whalshone Driving	\$18.00	\$20.00	\$22.00	\$24.00	\$27.00	\$30.00	\$33.00	\$36.00
Eureka, Two-thirds Whalshone	15.00	16.50	18.00	20.00	.....	.....
Bull Bone, Half-length Whale bone	11.00	12.00	13.00	15.00	.....	.....
American Standard	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center	6.00	6.00	6.50	7.00	7.50	9.00	.....	.....
New Name, Stocked Java, Black and Wine Colors	6.00	.....	.....	.....	.....	.....
Americus, 98 Pen Whip	6.00	.....	.....	.....	.....	.....
Gents' Light Driving No. 111	6.00	.....	.....	.....	.....	.....
Gents' Light Driving No. 106	5.00	.....	.....	.....	.....	.....
Hand-made Stocked Java No. 108	8.75	4.00	.....	.....	.....	.....	.....
A large variety of cheaper grades
Team Whips
Toy Whips
Hardware Assortment, 10/American, 75 Whips for \$50.00.

Wire and Wire Goods—**Iron—**

Market,	Br. & Ann., Nos. 0 to 18.	Extra 50¢ 10¢ often given and low net prices often made on large lots.
Br. & Ann., Nos. 0 to 18.
Cop'd, Nos. 0 to 18.
Galv., Nos. 0 to 18.
Tin'd, Tin'd list, Nos. 0 to 18.

Stone, Br. and Ann'd,	Nos. 16 to 18.	80%	Extra 10%
Nos. 19 to 26.	80%	.....
Nos. 27 to 36.	82%	.....
Ann'd Wire on Spools
Brass, list Jan. 18, 1894
Cast Steel Wire
Copper, list Jan. 18, 1894
Galvanized Fence
Malin's An'd & Tin'd on Spools
Malin's Brass and Cop. on Spools

Steel Music Wire, 12 to 30, imported.....
 Stubs' Steel Wire.....
 Tate's Spooled, Tin'd & Annealed.....
 Tate's Spooled, Cop. and Brass.....
 Tinned Broom Wire, 12 to 21, # 2.....
 Wire Clothes Line, see Lines.....
 Wire Picture Cord, see Cord.....

Bright Wire Goods—

Standard list.....
 Wire Cloth and Netting—
 Galvanized Wire Netting.....
 Painted Screen Cloth 100 ft \$1.40 @ \$1.45

Wire Barb—

See Trade Report.

Wire Rope—See Rope, Wire.**Wrenches—**

American Adjustable	.....
Baxter's Adjustable "8"	.....
Baxter's Diagonal	.....
Coe's Genuine	.....
Coe's Mechanics	.....
Girard Standard	.....
Lamson & Sessions' Engineers	.....
Lamson & Sessions' Standard	.....
Girard Agricultural	.....
Lamson & Sessions' Agric'l.	.....
P. S. & W. Agricultural	.....
W. & B. Diamond	.....
Acme, Bright	.....
Acme, Nickel	.....

Alken's Pocket (Bright).....
 Alligator.....
 Always Ready.....
 Beams & Call's.....
 Adjustable S.....
 Briggs' Pattern.....
 Combination Black.....
 Combination Bright.....
 Cylinder or Gas Pipe.....
 Extra Heavy.....
 Merrick's Pattern.....
 No. 3 Pipe Bright.....
 Bit Wrench, A.J., Tatum's.....

Boardman's.....
 Cincinnati Brace Wrenches.....
 Diamond Steel.....
 Donohue's Engineer.....
 Eagle.....
 Hercules.....
 Taper Vise Wrench.....
 The Favorite Pocket.....
 Walker's.....
 Webster's Pat. Combination.....

Wringers, Clothes—
 Am. Wringer Co.'s list, July 1, 1892.....
 Colby Wringer Co., list Sept. 1, 1891.....
 Lovell Mfg. Co., list July 1, 1892.....
 Peerless Mfg. Co., list Feb. 1, 1892.....
 National Wringer & Mfg. Co., list June 1, 1892.....

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1893.....
 85¢ 10¢ 35¢ 15

Paints, Oils and Colors.—Wholesale Prices.**Animal and Vegetable Oils—**

Linseed, City, raw, per gal.	52	...
Linseed, City, boiled	55	...
Linseed, Western, raw	50	...
Lard, City, Extra Winter	64	...
Lard, City, Prime	63	...
Lard, City, No. 1	64	...
Lard, City, No. 1	65	...
Lard, Western, prime	63	...
Cotton-seed, Crude, prime	30	...
Cotton-seed, Crude, off grades	28	...
Cotton-seed, Summer Yellow, prime	33	...
Cotton-seed, Summer Yellow, off grades	31	...
Sperm, Crude	63	...
Sperm, Natural Spring	63	...
Sperm, Bleached Spring	68	...
Sperm, Natural Winter	68	...
Sperm, Bleached Winter	73	...
Whale, Crude	44	...
Whale, Natural Winter	44	...
Whale, Bleached Winter	47	...
Whale, Extra Bleached	43	...
Sea Elephant, Bleached	43	...
Winter	28	...
Menhaden, Crude, Sound	25	...
Menhaden, Crude, Southern	25	...
Menhaden, Light Pressed	34	...
Menhaden, Bleached W'ter	38	...
Menhaden, Extra Bleached	40	...
Tallow, City, prime	45	...
Tallow, Western, prime	43	...
Cocoonut, Ceylon	64	...
Cocoonut, Ceylon	64	...
Cod, Domestic	38	...
Cod, Foreign	40	...
Red Elaine	35	...
Red Saponified	44	...
Bank	35	...
Straits	68	...
Olive, Italian, bbls	68	...
Neatsfoot, prime	60	...
Palm, prime, Lagos	54	...

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test	7	7 1/2
Black, 29 gravity, 15 cold test	7	8
Black, 29 gravity, summer	5 1/2	6 1/2

Cylinder light, filtered	12	16
Cylinder dark, filtered	10	13
Paraffine, 23 1/2 @ 24 gravity	11	12
Paraffine, 25 gravity	10	11
Paraffine, 28 gravity	7 1/2	8
Paraffine, red	9 1/2	10 1/2

Paints and Colors—

Barytes, Foreign, 10 ton	\$22.00	\$24.00
Barytes, Amer. floated	\$29.00	\$32.00
Barytes, Amer. No. 1	18.00	18.00
Barytes, Amer. No. 2	13.00	15.00
Barytes, Amer. No. 3	11.00	12.00
Blue, Celestial	4	8
Blue, Chinese	40	50
Blue, Prussian	25	40
Blue, Ultramarine	8	25
Brown, Spanish	3 1/2	4
Brown, Vandyke, Amer.	3	3 1/2
Brown, Vandyke, English	3	3 1/2
Carmin, No. 40, in bulk	2.00	...
Carmin, No. 40, in boxes or barrels	2.10	...
Carmin, No. 40, in ounce bottles	3.00	...
Chalk, in bbls, 100 lb	1.75	2.00
Chalk, in bbls, 100 lb	33	40
China Clay, English	13.00	18.00
Cobalt Oxide, prep'd	9.00	11.00
Cobalt Oxide, black	10	12
Cobalt Oxide, black, lots 100 lb	1.90	...
Cobalt Oxide, black, less 100 lb	1.96	...
Green, Paris, in bulk	...	20
Green, Paris, 170 @ 175 lb	...	...
Green, Paris, small pack	22	26 1/2
Rebates, 3¢ on 10,000 lb or 2¢ on 4,000 lb, 1¢ on 2,000 lb, 1¢ on 500 to 1,000 lb purchased during the season	...	...
Green, Chrome, ordinary	6	12
Green, Chrome, pure	22	25
Lead, Eng. B.B. white	7	8
Lead, Amn. White	4 1/2	4 3/4
Dry	5 1/2	6 1/2
In Oil	5 1/2	6 1/2
Lead, White, in oil, 25 lb tin pails, add to keg price	...	1 1/2
Lead, White, in oil, 12 1/2 lb tin pails, add to keg price	...	1
Lead, White, in oil, 1 to 5 lb assorted tins, add to keg price	...	2 1/2

Lead, Red, bbls, and 1/2 bbls	5 1/2	6 1/2
Lead, Red, kegs	5 1/2	6
Litharge, kegs	5 1/2	6
Orange Mineral, French	10	10 1/2
Orange Mineral, German	7 1/2	8
Orange Mineral, American	7 1/2	8
Red, Indian, English	5	15
Red, Indian, American	2	5
Red, Turkey	9	14
Red, Tuscan	7	10
Red, Venetian, American	7	10
Red, Venetian, English	7	10
Sienna, Italian, Burnt and Powd.	4	5
Sienna, Ital., Burnt Lumps	1 1/2	3 1/2
Sienna, Ital., Raw Powd.	4 1/2	5 1/2
Sienna, Ital., Raw Lumps	1 1/2	3 1/2
Sienna, American, Burnt and Powdered	1 1/2	3 1/2
Talc, French	1 1/2	1 1/2
Talc, American	1	1 1/2
Terra Alba, Frch, 100 lb	65	75
Terra Alba, English	65	75
Terra Alba, American No. 1	65	75
Terra Alba, American No. 2	45	50
Umber, Turkey, Burnt and Powdered	2 1/2	3 1/2
Umber, Turkey, Raw and Powdered	2 1/2	3 1/2
Umber, Turkey, B.W. Lumps	2 1/2	3 1/2
Umber, Turkey, B.W. Amer.	1 1/2	1 1/2
Umber, Turkey, R.W. Amer.	1 1/2	1 1/2
Yellow, Chrome	10	25
Vermilion, American Lead	11	12
Vermilion, Quicks'g, bulk	43	...
Vermilion, Quicks'g, bags	44	...
Vermilion, Quicksilver sm'r	52	...
Vermilion, English Import	55	60
Vermilion, Imitation, Eng.	8	30
Vermilion, Trieste	90	95
Vermilion, Chinese	85	100
Whiting Common, 100 lb	40	45
Whiting Gliders	50	55
Zinc, American, dry	3 1/2	4 1/2
Zinc, French, Red Seal	7	7 1/2

Zinc, Frch, Green Seal	8 1/2	9
Zinc, Frch, V. M. A.	6	7
Zinc, Antwerp, Red Seal	6	6 1/2
Zinc, Antwerp, Green Seal	6 1/2	7 1/2
Zinc, German, L. Z. O.	5	5 1/2
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over	10 1/2	...
Zinc, V. M. in Poppy Oil, Red Seal	11	...
lots less than one ton	10 1/2	...
lots of 1 ton and over	10 1/2	...
lots of less than 1 ton	10 1/2	...
Discounts—French Zinc—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1¢; 25 bbls, 2¢; 50 bbls, 4¢. No discount allowed on less than bbl. lots.	...	...

Colors in Oil—

Black, Drop, Frankfort	25	30
Black, Drop, English	12	15
Black, Drop, Domestic	7	10
Black, Lamplack, Best	20	35
Black, Lamplack, Common	7	13
Black, Ivory	8	15
Blue, Chinese	35	40
Blue, Prussian	20	45
Blue, Ultramarine	12	18
Brown, Vandyke	7	12
Green, Chrome	8	13
Green, Paris	16	18 1/2
Sienna, Raw	7	14
Sienna, Burnt	7	14
Umber, Raw	7	10
Umber, Burnt	7	10

Putty—

In barrels and 1/2 bbls	0.13¢	0.13¢
In tubs	0.13¢	0.13¢
In tin cans	0.13¢	0.13¢
In bladders	0.13¢	0.13¢

Spirits Turpentine—

In regular bbls	...	30
In machine bbls	...	30 1/2

Glue—

Low Grade	11	14
Cabinet	7	9
Medium White	12	14
Extra White	16	20
French	10	22
English	10	18
Irish	10	12 1/2

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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